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Editorial.

PRELIMINARY EXAMINATIONS.

As I took some part in the recent debate on this subject, which formed part of the proceedings of the April meeting of the Royal College of Veterinary Surgeons, I feel bound to recur to it in order to justify my contentions and those of my friends and supporters. Since the meeting of the Royal College I have been in correspondence with an Oxford scholar, to whom I referred both sets of papers for impartial examination. My friend is, I think, singularly free from bias of all kinds in regard to examinations, for although an Englishman himself, he spent a good many years of his life in Scottish schools and in the University of Edinburgh, so that he is able to look impartially at both sides of the question. His opinions are quoted lower down, and my readers can draw their own conclusions. Meantime I should like to discuss one or two points that emerged in the debate.

Professor M'Fadyean told us that by way of solving the difficulty he had written to the Secretary of the College of Preceptors, and learnt from him that his College would be willing to hold examinations in Edinburgh and Glasgow under the same conditions as at the Royal Veterinary College. This was very kind of Professor M'Fadyean, but I do not quite see that we are brought nearer to the solution of our difficulties thereby. Educational methods in England and Scotland vary considerably; the objects aimed at are the same—the goals are identical, but the roads are somewhat apart. In the higher branches of learning this makes little difference, because the high roads to knowledge, although they start from points wide asunder, gradually converge and finally run into one another, but it would be unfair to ask a lad fresh from school, and one probably who had little love of learning of any sort when he was there, to face unfamiliar forms of questions. He might be puzzled by the phraseology and mistake the drift of the examiner's question. Mr. M'Fadyean seems to ignore this point, or rather to conceal it, and, being an astute person, asks his fellow-counsellors to watch whether the English examination will be accepted in Scotland. He wishes his adopted countrymen in England to observe the tactics of these crafty Scots. "Watch," he seems to say, "how

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they will go round the snare but not into it." He gives us from his own experience some alarming figures regarding England. Out of 302 candidates for the Royal Veterinary College, only 67, or 22 per cent., obtained the second class second division certificate necessary to obtain admission to the College. This is truly appalling—78 per cent. plucked! An examiner in Edinburgh University, a friend of my own, whose subject is one of the fatal ones, tells me that even he is horrified when his conscience commands him to pluck 60 per cent. But worse is to follow. Had these young gentlemen been compelled to take second division *first* class certificates, only an average of 4 students would have passed in each of the last five years; had first class certificates been demanded, this average would have sunk to 3. Then Mr. M'Fadyean, terrified at his own figures, and the possibilities of bankruptcy and starvation which they reveal, wipes metaphorically the cold perspiration from his forehead, and bids us be thankful we are not Englishmen, that we have an easy examination of our own.

Then Professor Dewar has his innings. He scores splendidly off Professor M'Fadyean, telling him that the second class certificate of the College of Preceptors is not accepted by the General Medical Council, whilst the certificate of the Educational Institute of Scotland is. This is a perfectly fair test of the two examinations, and triumphantly dispels all Professor M'Fadyean's sneers and insinuations. The General Medical Council is a powerful and well-advised body, and fears no man; its decision is therefore a final proof of the comparative value of the examinations. Professor Dewar strengthens his case by an excellent illustration. Some young men from his College (the Dick), fearing the severity of the Educational Institute examinations, be it noted, resolved to try the Preceptors' examination at Newcastle, and what was the result of the ordeal? According to Professor M'Fadyean it ought to have been contemptuous rejection, but evidently the student lads gauge these things more accurately than that learned Professor. They estimated the comparative difficulty of the examinations, as we have said, very correctly; two of them got first class certificates in the second division, and one of them passed in two subjects with distinction. "Is there any doubt," adds Mr. Dewar, "that that man would have obtained a first class certificate if he had gone in for it?" There can be no doubt, one would think, and perhaps if Scottish students were to bestir themselves a little and prepare specially for the Preceptors' examination, they would take a good many first class certificates, and raise that dreadfully low average that causes Professor M'Fadyean so much alarm, and might cause him many a sleepless night. But this is not the point. There is no reason why they should so specially prepare, even with the laudable object of consoling Professor M'Fadyean. It is abundantly proved, as I think, that our Scottish examinations are more stringent than the English, but they have this mitigating circum-

stance, that they are better adapted to Scottish school methods. This, however, does not equalise matters ; very far from it. As an educationally important part of the country we are entitled to have a test of education in conformity with our own methods, and to propose, as Professor M'Fadyean does, that we should adopt the English standard—that is, the standard by which English students are gauged—is not to put us on the same footing. The proposal is specious and plausible, but it is fallacious, as those who make it are aware. They may, on their part, profess readiness to adopt the Scottish standard as a theoretically equal alternative, but they know that they will never be called on to give practical proof of their sincerity. All the talk about the havoc caused amongst English candidates by the Preceptors' examination merely goes to prove the generally unprepared condition of the young men who attempt it. It is almost certain that if our Scottish youth liked to prepare for the Preceptors' examination they would, as in the case of Mr. Dewar's candidates, give an excellent, perhaps a brilliant, account of themselves, but I can only repeat that this would be an unjust demand. What I do say is, that as the Scottish examination is much stiffer for Scottish candidates than the English is for the English candidates, some concession ought to be made. I urge that our students should be allowed, as intending medical students are allowed, to take the examination in two sittings. It is very difficult for a farmer's son, fond of out-door life and out-door sports—the very man we want for our profession—to pass an examination in three languages concurrently, even although one of these is his native language, with mathematics into the bargain. If he passes in English and Latin to-day, and in French and mathematics six months' hence, he does very well, indeed he is much more likely to do his work thoroughly and with lasting benefit to himself if he is allowed to take it in portions than if he takes it all at once. Mr. M'Fadyean's average of 22 per cent. is very low. I am very sorry for him ; if my English friends therefore claim a mitigation to the same extent I am willing to concede it, but I do urge upon the Council a relaxation of their rules with regard to our Scottish students.

Some points of contrast between the Preliminary Examinations of the College of Preceptors (Second Class) and the Educational Institute of Scotland.

The percentages of marks are unknown, but it has to be remarked that veterinary candidates for the Preceptors' examination have only to pass the lower grade (or second division) of the second class.

P. is used to indicate College of Preceptors (England).
E. ,, Educational Institute (Scotland).

ENGLISH.

I. E. Write out a passage dictated—that is, presumably, a passage given orally—by the examiner.

P. Write out the words which are not fully given in a *printed* passage. This is a piece of Englsh with letters omitted here and there. To assist the student, the meanings of the more difficult words are given at the foot.

II. Analysis and parsing about equal in both.

III. E. A difficult abstract question on the verb.
P. Four easy grammatical questions.

IV. E. Ten difficult etymologies.
P. A question on prefixes and affixes.

V. E. An essay.
P. Correction of sentences.

Generally.—(*a*) No essay seems to be asked by P. but invariably by E.

(*b*) P. Special books are set,—for example, a play of Shakespeare and a poem of Scott. The candidate has a choice of *three* departments (in each of which is included the spelling test mentioned above); these are (1) English grammar and analysis; (2) a play of Shakespeare, with grammar; (3) a poem of Scott. E. sets no special books.

(*c*) Derivations (with shorthand transcription as an alternative) are peculiar to E.

(*d*) Writing to dictation is peculiar to E.

Mathematics.

(*a*) Euclid. The papers cover the same ground, and hence there is no possibility of getting beyond a certain standard.

(*b*) Algebra. The standards are about equal.

(*c*) Arithmetic. Of the two classes of papers those of E. are decidedly the more difficult; in fact some of the E. questions are quite on the standard of P. first-class.

Latin.

E. prescribes two books, on *both* of which the candidates are examined, a book of Cæsar and a book of Virgil. P. provides alternative papers (presumably on prescribed books) with grammatical questions based on these books. The translation *from* English is harder in E. than in P. The unseen translation in E. requires some thinking on the part of the candidate; in P. it is infantine. The grammar questions are on much the same standard.

Greek.

Here E. is harder than the P. *first* class paper, for there is a piece of unseen translation to be done. In P. all that is prescribed is four chapters of Xenophon. The sentences in E. are harder. Grammar much the same.

French and German.

French pretty nearly equal. German rather more difficult in E. than P.

In all these papers everything depends on the standard of marking, but if the Preceptors' candidates require to attain only to the lower standard—as to the limit of which I have no information, but which will probably be a good deal under 50 per cent. and may possibly go down to 30—it may be taken as certain that the Scottish examination is much stiffer than the English.

Original Papers.

MEGRIMS.

BY HENRY TAYLOR, ESQ., M.R.C.V.S., LONDON.

MEGRIMS is a disease found only in horses, and characterised by attacks of vertigo occurring when the animal is performing harness work. The first noticeable indications being head symptoms would suggest some nervous phenomena, but the pathology is unknown. Many of the diseases of the nervous system even in man are still shrouded in mystery, and we may be said to know still less about them in our patients. One great cause acting against the veterinarian is the want of articulate speech in our animals, hence subjective symptoms, which, to say the least, assist in locating the lesion, with us avail nothing. We often derive benefit from contrasting a disease which occurs both in our patients and the human subject, but we have many affections in them which have no equivalent in man. Megrims is one of the latter.

The idea has been promulgated that megrims in horses is analogous to epilepsy in man, but this is plainly an error, for whilst the latter occurs under varying conditions, and often in a state of repose, the former requires some degree of work before it is manifested. It simulates it in the sense that megrims occurs suddenly, with partial or complete loss of consciousness, and passes off rapidly.

The real causes of megrims are rather obscure; its nature is unknown, and there does not appear to be any post-mortem on record where any definite lesions were found. Perhaps there may be some undiscovered lesion in the cerebrum or cerebellum.

Fleming[1] says he inclines to the belief that a form of vertigo in man called Menière's Disease also occurs in horses. In the human subject the term is used to include all cases of sudden vertigo accompanied by noises in the ears and deafness. Under the heading of Menière's Disease, Osler[2] says, "The attack sets in suddenly with a buzzing noise in the ears and the patient feels as if he were reeling or staggering. He may feel himself to be reeling or the objects about him may seem to be turning, or the phenomena may be combined. The attack is often so sudden that the patient falls, though as a rule he has time to steady himself by grasping some neighbouring object. There may be slight but transient loss of consciousness: in a few minutes, or even less, the vertigo passes off, and the patient becomes pale and nauseated, a clammy sweat breaks out on the face, and vomiting may follow. The pathology of the disease has been much discussed, and there are many theories. It seems to be tolerably certain at present that the disturbances of equilibrium, including the vertigo, are dependent upon a disturbance of the functions of the vestibular nerve or of the organs with which it is connected, either in its peripheral distribution or by means of its central connection. Labyrinthine vertigo is paroxysmal, coming on at irregular intervals, weeks or months sometimes elapsing between the attacks. As a rule the patients have no affection of the middle ear." Fleming in support of this records two cases, the subject of which when the attacks came on always acted as if there was something in one ear, and

[1] Veterinary Record, No. 153, p. 625.
[2] Principles and Practice of Medicine, p. 1058 (1898).

always staggered to that side. The idea that Menière's Disease occurs in the horse does not appear to have found favour with the veterinary profession: there are no facts supporting the theory that megrims is an aural disease.

If we do not know the *causa causans* of megrims, at any rate we know something of the conditions under which it occurs. The season of the year has undoubtedly some influence, cases being much more frequent during the hot summer weather. It only occurs during exertion, and, moreover, it only seems to occur in horses during collar work. Mr. Hunting [1] says, "In a horse of my own these attacks occurred every summer for three years, but only in harness. In the saddle this animal could be ridden any distance on the hottest day, and at any pace, without a sign of megrims. I sold it for saddle work, telling the buyer how it was affected by harness. He only used it in the saddle, and two years afterwards it was still apparently sound and healthy, never having shown a sign of disease."

Mr. Burrell also had a horse a short time ago which never showed any indications of megrims in the saddle, but only when he was driven.

Reasoning from the fact of megrims being only met with in harness, the deduction is that there must be some association between wearing a collar and its manifestation. Perhaps in horses subject to attacks of megrims the collar exercises undue pressure on some of the blood-vessels at the root of the neck, causing temporarily a stagnation in the flow of blood through the brain, and diminution in the quantity supplied to the heart, with consequent abeyance of function of either one or the other for the time being. It is believed by some that cardiac diseases leading to syncope are the cause of megrims. If there is any reason to suspect the collar in an animal affected with this disease, a change might be made to a breast-strap, which would bring the pressure on different areas.

Sex does not appear to have any influence,—both mares and geldings are affected.

The symptoms of megrims are a shaking or jerking of the head to one side, swaying of the body, or staggering, and sometimes the animal may fall. Twitching of the ears may be present, and often the first noticeable symptom is a laying back of one ear, and the inclination of the head to that side; after which he acts as if he were giddy, and either comes to a standstill and shakes his head or collapses. The immediate treatment consists in unharnessing, taking the animal into the shade, and the application of cold water to the head, but in many instances the attack passes off quickly if the animal be stopped. Bleeding may be resorted to. Afterwards a purgative should be administered and the diet regulated.

It should be noted that we may also get vertigo from cerebellar disease, brain tumours, and gastric derangements, but the differential diagnosis between megrims and the other vertiginous diseases is the occurrence of the former only when in harness.

An animal which suffers from megrims is an unsound one, and a horse which has had one attack is very liable to a recurrence.

[1] Veterinary Record, No. 159, p. 42.

PRESIDENTIAL ADDRESS.[1]

BY W. SHIPLEY, JUN., F.R.C.V.S.

I GENERALLY find in addresses of this kind that we pat ourselves on the back, and speak of the immense strides we have made in our profession during the last fifty years, and I am not the one to depreciate those immense improvements that have occurred. I would, however, endeavour to point out other matters which have not progressed as they ought, and to which we might reasonably give a little attention. I may commence by saying that a greater part of the development of our science has been due to the individual efforts of only a few members, and that in anything like unity we have been wanting.

The great neglect of the veterinary medical societies—societies originally intended to advance the status of the profession, to bring the busy practitioners together to hear the discussion of matters of improvement and interest, are neglected. One has a great trouble to get a good representative meeting. The great fault lies in the apathy of the members of the profession, a failing that applies to all matters in which they should be interested. We owe a very great debt to the learned members of our profession and to the professors of the various colleges who give their time and trouble to come down and give us the result of their investigations and practice, which helps to keep us in touch with the advance of the times. Individual effort alone on the part of a few members keeps these societies going. The membership is nothing in proportion to the numbers of the veterinary surgeons practising in the area of the Association. The National Veterinary Association, which holds its big conferences annually in various towns in the United Kingdom, has to put forth big efforts, social as well as scientific, to get anything like a fair muster. This Association should be a powerful organisation in the profession, a means to air our grievances and urge our claims.

The Royal College of Veterinary Surgeons, ever endeavouring to advance our profession, is not really in touch with the veterinary practitioner—not through the fault of the College, but through the individual neglect of those on the register to record their vote. Gentlemen are elected to the Council and give an immense amount of time and labour, and go to a considerable amount of expense to attend the Committee and Council meetings, and although one does not read of the Committee meetings in the veterinary press, I can assure you that is where the real work is done, and yet when the time for election comes on there are many who will not take the trouble to fill in their voting papers. Many of these men would go half mad over a Parliamentary election in which they have little interest.

Another class of societies—the National Veterinary Benevolent and Mutual Defence Society, and the Victoria Jubilee Benevolent Society. Taking the first, cannot members of the profession see the immense amount of good it has done, and the help it has been to many practitioners? Can any member point out a better and cheaper form of insurance than this, where for 10s. 6d. a year one can insure oneself against all stupid and vexatious litigation? And knowing again that should his money not be required for defence purposes it would be used for the grander object of alleviating the distress of our unfortunate *confrères*. This Society has a membership of 222. What is this when we have on the

[1] Delivered before the Eastern Counties Veterinary Medical Society, May 17, 1900.

register of the Royal College of Veterinary Surgeons 3417 members? I cannot do better when speaking of this Society than read a paragraph from the President of the Society's speech at the last annual meeting:—

"May I once more appeal to all members of our profession who have not joined us to take the first opportunity of doing so. We have been doing a good work for a number of years, and the scope is now considerably extended since we altered our rules. We are all liable to litigation, and when trouble does come it is a great help to the members concerned to be able to lay their case before a number of their *confrères*, who will give the best of their advice and help to defend the case if needed, both in person and in kind. And if you do not require their help, you have the satisfaction, at a small cost, of helping a brother practitioner when in trouble, or his widow and children when in need."

I may say I have only laid one case before this Society, and it was promptly met, and was the source of great comfort and assistance to a deserving widow.

Some worthy members of our profession, headed by Professor Penberthy, a good old friend of our Society, started in 1897 the Victoria Jubilee Benevolent Society to celebrate the reign of Her Most Gracious Majesty the Queen—to celebrate the very reign under which you say you have made such marked progress. This Society is solely benevolent, and was formed to help the widows and children of those pals of ours at College and elsewhere who are unsuccessful, or who die before they are able to make provision for their dependents; and what have we done to celebrate that reign and support this object? Again, out of a register of nearly three and a half thousand, I find the funds in hand are under £1000. And remember you must endow your Society—must have invested funds. The number of subscribers is 170, and the annual income from it is £130. Now, how on earth can these societies succeed if you give them such little support, and how can they get at the many sad cases which we all know exist if you do not all individually take an interest in the societies and bring the benefits of these societies before those that should enjoy them?

I feel I might say a great deal more about these societies to members of our profession. How many are there of our profession, alas! who, as soon as they have made their various fortunes, have left it and thought no more of the very profession, the very license they received to make that fortune. There are only a few names one can call to mind of men who have endowed scholarships or prizes, or who by their own efforts have left the profession much better than they found it. Some will say, and rightly too, that our profession is poor; there have, however, been many rich men in it, but who can say it is so poor that it cannot spare its mite in proportion to its position? Bricklayers, labourers, mechanics of all kinds, can find a certain weekly allowance to keep their funds going, funds collectively amounting to many millions.

Gentlemen, you are tired of this. I most sum up. Are we occupying the position we should? I say no. Until quite recently the Board of Agriculture, with an annual expenditure of over £105,000, had but one veterinary surgeon on the staff. Many situations that should be occupied by veterinary surgeons are occupied by soldiers, sailors, and any class of man who has means of influence. It is your own apathy that has brought things to this pass.

Our scientific position has advanced, our social position has advanced, but how slowly, and I believe we are getting even more apathetic.

SOME OF THE DISEASES OF THE HORSE'S FOOT.

BY PROFESSOR PRITCHARD.[1]

PROFESSOR PRITCHARD said he did not expect he should tell them anything new. It was not always necessary to introduce new matter to make a subject interesting, because very frequently new material, so far as his experience taught him, was misleading. Over and over again had he known introductions in connections with medicine and surgery which, to use a phrase, took the town by storm for a short time and then suddenly disappeared. If they called to mind old material, and worked it up with the view of showing that it was originally started on sound foundations, then an address of that kind became useful. It also became useful in another way, for if he could only say something calculated to create discussion, and a free interchange of opinion without quarrelling—which he was sure they never did—then further good was done. The first condition he would speak about was that bane of horse-flesh, and the horse's foot, navicular disease. He would sum up the causes in a sentence or two. He was strongly of opinion that in the majority of cases it was due to hereditary taint handed down from sire or dam, or both. Perhaps another cause very frequently in operation was that of concussion, but there were also others that would give rise to navicular disease even without either hereditary taint or concussion. It might be the result of an accident, such as picking up a nail and puncturing underneath the navicular joint capsule, which was not a joint at all, for it was only a bursa, or from an injury to the underneath surface of the foot by a flint or something of that kind, setting up inflammation of the tendon which passes underneath the navicular bone—for tendons could become inflamed—which inflammation might extend to the navicular joint capsule, and set up the disease usually spoken of as navicular disease.

What was navicular disease? In his opinion it was nothing short of ulceration of the navicular bone. Where did this ulceration commence? The late Professor Spooner, he believed, was the first to point out that it commenced in the centre of the bone, therefore affecting all the muscles bearing on the underneath surface of the bone. Their forefathers were under the impression that the disease commenced in the muscles, but Professor Spooner went further than that, and convinced him (Professor Pritchard) that the ulceration commenced in the centre of the bone and extended from the centre to the underneath surface. Then came the question, why to the underneath surface of the bone? Why does it not extend in an upward direction to that part of the bone which articulates with the os corona? He had never heard any argument or read anything about it, but, turning the matter over in his own mind, he had come to the conclusion it was a matter of very considerable argument. In the first place the injury commenced from below, and therefore they had a right to suggest that the tendency of that ulceration was to spread towards the part where the injury was first inflicted. There was no reason to his mind why it should extend down and not upwards. The underneath surface was coated with cartilage, and the bone had an upper surface of cartilage, but the upper surface was of ordinary character, while the underneath surface

[1] Address delivered before the Eastern Counties Veterinary Medical Society May 17, 1900.

was fibro-cartilage, and contained a considerable amount of circulation of blood into it compared with the cartilage covering the upper part. Where there was ulceration extending in a vascular structure it was far more likely to proceed in a direction where the vascularity was great rather than in a direction where it was small. With regard to the argument as to this ulceration commencing in the centre of the bone, he called attention to ulceration of bones in other parts of the horse's body. Take, for example, articular disease of the hock. They knew that in the majority of instances it arose from concussion to the small bones underneath, the small bones commonly called the cushion bones. They knew for a positive fact that ulceration commenced in these bones and extended towards the cartilage. He need not describe the symptoms of navicular disease, which were as well known to them as to him, or to tell them that the malady was incurable. However well an animal might recover, or apparently recover, the disease was incurable. Suppose, for example, an animal picked up a nail and punctured the tendon running underneath the navicular bone, and that it was the hind foot. Such an amount of injury has taken place that the bursa—navicular joint is a misnomer—between the tendon and bone was robbed of its vitality, adhesion took place between the tendon and the underneath surface of the bone, and the animal to a very considerable extent recovered. But then they had navicular disease. There was no cure in a case of that sort, since cure meant absolute restoration to health. What, then, did they do? As veterinary surgeons they were called upon to relieve, and the only means of relief was by destroying the power of sensation to the horse's foot, which they were enabled to do by dividing the plantar nerves either in the higher or lower nerves, and enabling the animal to go without feeling pain, but they had not cured the disease. A great deal had been said and written as to the capability of the operator in performing the operation, but it was not so much skill in this direction as in the careful selection of the case for operation. He would take credit for himself that he could unnerve a horse, as it was termed, but he took far more credit for selecting suitable cases for the operation. In nine cases out of ten, if a case was properly selected, the operation would succeed, and in nine cases out ten, if the case was not selected properly, the operation would fail. If they elected to unnerve a horse they should select a foot with plenty of horn on it, with high heels, and also select the case in another way. They should not attempt to unnerve a horse that had been lame from navicular disease for nine or ten years, because then the ulceration of the bone had gone on for so long that the central part of the structure would be absolutely wasted—taken away by absorption. The probability would be, when such an animal was robbed of sensation in his foot, that he would use it in such a way that the bone would become broken, the disease would form in the centre of the foot and the hoof become cast. Ulceration of the tendons went on as well as ulceration of the bone, and in cases of eight or ten years' standing the tendons might break, and then they would have a similar result as a consequence of the bone being ulcerated. If they had a case of navicular disease that had not existed for anything like such a length of time, and the horse possessed a strong foot, then there might be a strong chance of restoring the animal to work, and it could go on for several years.

He advised that they should prepare a horse well before attempting to operate. Give the animal a good dose of physic, and well cool the leg by

bandages. He had heard teachers say that if they wanted to unnerve a horse's leg cleverly, it should be put into a bath of cold water for an hour first. A greater mistake could not be made. "Many a ponderous and heavy gate hangs upon a little hinge," and how he discovered this mistake was by one day going into a fishmonger's shop, when there were six inches of snow on the ground and the weather was as cold as we generally had it in this country. There was a man cleaning fish, washing it in cold water, and had been doing so for some hours. He said he would not have that man's job for a thousand a year, as his hands must be like ice. The shopman said, "George, wipe your hands, and shake hands with this gentleman." His hands were burning hot, so to speak. It at once occurred to him (Professor Pritchard) that putting a horse's leg into cold water for an hour before operating upon it for neurotomy was wrong. Ever since, he had had a pail of cold water, then taken a sponge holding a quart, and dribbled the water on to the leg for two minutes. Then he operated, and he did not get a spot of blood. If the leg was kept in cold water longer than that, reaction took place, and it was absolutely worse than if no cold water was applied at all. That hint might be useful when they had to unnerve a horse.

Seedy-toe was the next malady he would speak about. It was a separation between the hard outer table of horn and that table on the inner side to which were attached the horny laminæ. It might be in the toe or quarter, in the hind feet or fore. Separation took place, and would continue and extend until the disease was stopped. What cause gave rise to this? Some years ago Professor Axe wrote an elaborate article in which he said it was due to the presence of a parasite. Generally, all diseases, they were now told, were due to parasites or microbes, but Professor Axe had seen the advisability to an extent of retracting the opinion he then gave. He (Professor Pritchard) knew that in a case of seedy-toe, if the crumbling horn was put on a microscope parasites would be seen, but the potent question was whether the parasite found its way there after the disease commenced. Professor Pritchard said his opinion was that the parasite found its way there after the disease commenced. It would extend upward and in a lateral direction until it reached the coronet, and might extend half-way round the foot. The remedy was to remove the outer table of horn. Their forefathers advocated pouring in scalding hot tar, pitch, and other irritants of that description into the fissure, but the remedy he advised was the only radical one. It would not do to half remove it. If only the greater part was taken off, leaving but the smallest crevice that he might have to put his spectacles on to see, the disease would go on extending. Never mind if they had to cut it down till blood was drawn. In the majority of books it would be found that the coronet should be blistered, and he had no objection to that line of treatment. He thought it a very good one, but it was better to apply something to the coronet which would stimulate it without absolutely having recourse to blister, and which they could continue to apply. If the case was not a bad one, the horse could be continued at work. They would doubtless ask what he gave. It was—

Ol. Tereb.	-	℥ij.
Liq. Ammon. F.	-	℥ij.
Ol. Olivæ ad.	-	℥vj.

—then they would have an admirable dressing for the coronet. Leave it off for a time after the circulation is excited; then apply it again. The question might arise whether a horse with seedy-toe is unsound. It should not arise, because unquestionably the horse was unsound.

As to laminitis, it was a malady they knew as much about as he did, and he would therefore principally comment upon the causes that gave rise to it. No doubt concussion was very frequently the cause, particularly if the animal's system was in a condition to be annoyed by concussion. There might be paper, wood, and coal in a grate, but there was no fire until a spark was brought to bear. Perhaps thousands of horses were predisposed to laminitis before laminitis took place. Subject them to concussion and laminitis ensued. How many hundreds of cases of laminitis had been taken for inflamed lungs or congestion of the lungs, because the pain the poor animal was subject to causes the pulse to rise, and increases the temperature, though not to a very great extent, but to a very much greater extent in respiration. Any veterinary surgeon called in to see a horse presenting these symptoms, probably by accident may not have the animal moved, and thereupon comes to the conclusion it has got congestion of the lungs. Had the horse been asked to walk he would have very soon found that it could not move at all, or could only move with very great difficulty. He had a very nice pony, and being a member of the Committee of the Royal Society for the Prevention of Cruelty to Animals he did not starve him. This pony was borrowed by a friend—by-the-by there were two things one should lend to nobody, one was your horse and the other your wife (laughter)—and he unfortunately broke through that rule. His friend borrowed the pony to go to Epsom races. It could trot well, and when it had its head do about 14 miles in the hour. The roads were very hard, and his friend, having taken a friend of his, was anxious to show how well his borrowed pony could go, and he did go. About three o'clock the next morning Professor Pritchard said he was called up and told his pony was very ill. When he went to see his pony he found another veterinary surgeon, old enough to be his father, had been called in, who thought it had inflammation of the lungs, with the result that the pony's loin was blistered. He was blistered all along his back and the side of his chest. It could be imagined what his pony looked like. He had its shoes taken off and succeeded in saving its life for a fortnight. Then the points of its pedal bones came through the soles of the feet, and he had him destroyed. That showed how even an experienced surgeon might make a mistake about a case of laminitis. That veterinary surgeon sent him in a bill for 4s. for removing the shoes, which he need scarcely say he did not pay. Therefore they should be on their guard, for a horse may have laminitis in its hind feet without his fore feet being affected. Such cases were rare, but they did occur; a horse might have it from overfeeding, from metastasis, the passage of inflammation from one part of the body to another. More frequently it was metastasis from the bowels to the feet. It might also be from the lungs, but that did not often happen. Not uncommonly it took place from the bowels, particularly when drastic purgatives had been used for a supposed stoppage, and superpurgation had set in. They all wished to attain absolute recovery, and this more frequently took place when laminitis happened to one foot, less frequently when it happened to both fore feet. In laminitis of one foot, complete recovery more frequently took place when it was the

result of an accident, a prick, picking up a nail or something of that kind; not so frequently in the fore limbs, because these were the limbs that bore the weight of the body, and had to put up with the irritation.

With regard to treatment, they were told not to bleed, but because there was a chance of phlebitis or inflammation of the veins and the transmission of the disease through the veins, he was disposed to believe in blood-letting in laminitis, and in purgatives, but not of a drastic character. He believed also in poultices and exercise. Particularly was he fond of exercise in the first stage.. The late Mr. Broad, of Bath, used to have a horse walked about and even flogged until it did walk, but that was carrying the treatment too far. With a horse in the early stages of laminitis there was nothing more or less to deal with than the congested condition of the laminæ, and not an inflamed state. When the horse was walked exercise brought about circulation in the foot. The veins of the horse's foot were one of the examples of veins without valves. The veins in one's arm or leg carry the blood by means of contracting the arm or leg upon the external surface of those veins and forced the blood a certain distance. It could not go back on account of pressure. Venous circulation in the horse's foot was carried on entirely by the use he made of his body and the pressure every time he put his foot down. In the early stages, when the laminæ were congested but not inflamed, exercise assisted the circulation by emptying these veins. When the case had got beyond this, and there was an inflamed condition of the laminæ, it was not only doing harm, but it was absolutely cruel to exercise the horse. He hoped he had said enough to create discussion and arouse interest in their minds. He thanked them for the kind manner in which they had listened to him, and said he would be obliged if they would cross-examine him.

CLINICAL DIAGNOSIS OF RABIES.[1]

DURING the last two years rabies has made wider ravages than we are accustomed to meet with in the working of our Diseases of Animals Act.

Statistical reports not only record a greater number of cases in the frontier provinces, but the disease is more frequently observed in the interior of the kingdom. In Dresden and its environs, according to Johne's communications, it has assumed an epidemic character.

On a par with the spreading of rabies stands the increase of injuries in man caused by the bites of rabid dogs. Kirchner reports that in Prussia in 1897 161, and in 1898 254 injuries from bites were officially reported. They occurred in those two years principally in the frontier districts adjoining Russia, Mähren, Austrian Silesia, and Bohemia. The number of human beings injured by bites has increased during 1898 in all the provinces, with the exception of East Prussia and Schleswig-Holstein.

The 254 injuries from bites are distributed over 87 departments, of which 13 adjoin the Russian, 11 the Austrian, and 4 the Saxon frontier; 17 further departments are divided from these frontiers only by parts of other departments. From the collected results we learn that 144 bite-injuries have been caused in 45 departments by dogs whose infection

[1] Abstract of a Lecture delivered by Dr. PETER before the Veterinary Union of the Province of Brandenburg.

must be referred to foreign countries. The remaining 110 bite-injuries are distributed over 42 departments, which, being in the eastern part of the monarchy, lie next door to the afflicted frontier provinces.

Through these facts of Kirchner's is confirmed the old fact, which has been repeated year after year in the "Yearly Reports of the Imperial Technical Deputation for Veterinary Science on the spread of Infectious Diseases of Animals in Prussia," that rabies is introduced into Germany principally from Russia and Austria, and is spread westwards from the frontier regions. Marx regards the Oder as the western boundary of the cases introduced from the east. The introduction of rabies from Saxony and Silesia to Central Germany is very limited, because there, as a result of the much more crowded population, and consequently more easily practicable regulations of the veterinary police, wandering dogs suspected of rabies might be easily rendered harmless. That the veterinary police staff works well in the frontier provinces is shown by the fact that we have here in the country to deal with only sporadic cases as a rule. Meanwhile, in our province of Brandenburg, rabies has appeared with greater frequency than before in various species of domestic animals, so that the chief of department at Potsdam saw himself driven to again call attention to the combating of rabies, and to impress on the district police officials strict attention to the veterinary police regulations.

One of the ends which the mandate has in view is the publication from time to time in local newspapers of instructions regarding the signs of rabies, and the danger of its transmission to domestic animals and to man, as well as to means for combating the disease. According to a special decree of 12th October 1897 every case of bite-injury is to be at once reported in a prescribed form to the authorities. From an endeavour of the State to protect human beings endangered by the bite of rabid dogs, there has resulted the establishment of a section for the curing and investigation of rabies at the Infectious Diseases Institute. This was opened on the 16th July last. Another decree draws attention to the beneficial institution, and prescribes what methods are to be followed after the occurrence of a bite to protect the person bitten. Here the official veterinarians have a very important part to play, for it depends on their skill in the examination of the suspected dog whether the person injured is induced to claim veterinary help or the help of the Institute in question.

My aim is first to show the present condition of the investigation and combating of rabies; secondly, to give a more particular discussion of the diagnosis of rabies in dogs and cattle, taking some of the cases investigated by me in the last few years as examples; and, finally, to return to the establishment and scope of the Institute for the treatment and investigation of rabies, which has just started on its career, and claims our warmest interest.

As a rule, rabies first claims notice by the occurrence of sporadic cases. Several epidemics have been recorded, and accounts of them are included in departmental literature. In Germany an outbreak occurred in 1720-23; in England, 1754-60; in Germany, Holland, and Sweden, 1822-30. Hydrophobia exists continuously in almost all the States of Europe. Nocard, in his excellent monograph on rabies, lays stress on the fact that France and Belgium in the west, and Russia in the east, form the two principal foci of infection, while Central Europe and the north are almost free. Rabies is relatively rare in Switzerland. In England the disease is on the

decrease, and it is to be supposed that that country may get rid of the disease entirely by means of the recently passed strict importation regulations. In Holland, Denmark, and Sweden only isolated cases occur. Austria returns 300-500 cases, Hungary 700, Russia 3000. Africa is afflicted with rabies along the whole of the Mediterranean coast. In 1893-4 the disease was also observed at the Cape, and in 1892 reached Madeira, where it spread rapidly. Janson reports its occurrence in Japan, and Callmette its appearance in Java, Singapore, Malacca, Lower Cochin-China, Tonkin, and Annam. In America, according to the reports of the Pasteur Institute, it is frequent in the States, Mexico, Brazil, and Chili. In Cuba from 1886-91 there were 1115 patients treated in the Institute at Havana. Australia is free, and might be kept free by strict regulations.

Though rabies is a disease which has long been known, investigations as to its nature did not commence very early. It is reported that in 1811 Gohier transmitted the disease to dogs through feeding them with the flesh of animals which had died of rabies. Twenty years later, in 1830, Vatel completely refuted the possibility of transmission through the digestive tract. The virulence of the saliva of rabid dogs was determined as early as 1813 by Gruner and Salm by means of subcutaneous injections. Berndt, of Greifswald, in 1822, after comprehensive experiments, discovered that rabies may be transmitted not only by subcutaneous inoculation of the saliva of rabid dogs, but of all animals attacked with rabies. More than thirty years elapsed before any further advances were made. To the French belongs the chief credit of subsequent discoveries.

The comparatively slight results which rabies research has to record up to the beginning of the eighties, cause us to assume that the danger to man of experimenting with dogs deterred people from investigations, and only one or two daring investigators (among others Hertwig especially) had the courage to make experimental studies on dogs.

The most fruitful era in the investigation of rabies may be said to date from 1879, when Galtier of Lyons showed the value of the inoculation of guinea-pigs. Intracranial inoculation of the guinea-pig is absolutely certain, and as there are no furious symptoms produced, the investigator runs no risk of being bitten. From 1881 onwards the studies of Pasteur, in conjunction with Chamberland, Thuillier, and Roux, gained publicity, and led to the discovery of protective inoculation.

It was first discovered that the virus is contained not only in the saliva but also in the nerve centres, and direct inoculation of the brain is a certain means of transmitting the disease. In 1884 it was shown that the virus was attenuated by passage through the ape. In the canine race rabies is endemic; all other species are infected by dogs. All kinds of mammals and man are susceptible of contagion. Rabies is frequent in the wolf, less so in the fox, badger, jackal, and hyena. Of herbivorous domestic animals, oxen, sheep, and goats are most susceptible. The horse seldom suffers from rabies, the camel, however, pretty often. Rabies may assume an epizootic character among stags and wild deer, an observation which has been repeatedly made in England. In Richmond Park, in 1886-87, 263 deer fell victims to rabies. Similar epizootics occurred at Eaton Hall and Swythamby, 1872 and 1880. The signs of rabies are known to every veterinarian. The best description of the whole picture of the disease is given by Nocard. The dumb and the rabid forms do not occur in equal proportions among susceptible animals. Dogs are especially liable to the rabid form; herbivoræ to the dumb.

The diagnosis of rabies in the living dog is relatively much easier than in the dead animal. The desire to bite first shows itself when other symptoms are already marked. If the suspected dog be shut up, it may be noticed that attacks of frenzy alternate with periods of listlessness. Trembling, twitching, and impairment of sensitiveness may also be noticed; to such an extent is anæsthesia present that the dog may bite deeply into his own muscles. Other symptoms are hallucinations, sexual excitement, and unrest. Swallowing is interfered with. During the excitement stages the dog presses against the walls of his place of confinement, bites them, howls, swallows straw or anything within reach. The later stages of the disease are marked by weakness and paralysis. The paralysis begins either in the hind quarters or in the jaws. Choreic movements and tetanic contractions next follow. The eyes are sunken, respiration becomes slow, and death occurs in from two to ten days from the onset of the disease.

In the dumb form there is unrest, moodiness, and an inclination to lick objects. Paralysis comes on early, and begins in various parts of the body. The dog remains quiet, and does not bite even when provoked. Death results in two or three days.

The occurrence of rabies in a neighbouring district will always furnish an important factor in diagnosis. That this fact, however, may lead one on a false track, and cause unfounded disquietude, I myself found two years ago. A lady wished her paralysed dog to be put an end to "with as little pain and torture as possible." It was suffering from a paraplegia, with paralysis of bladder and rectum. The death of the dog was to be performed with a watery solution of cyanide of potassium, of which I sprayed a more than sufficient dose into the right pleural sac. The action of the poison at once began. After a few minutes, however, the apparently dead dog began to make single respiratory movements, whereupon I tried to hold down its muzzle with my hand. As I caught hold, the top of the under finger of the left hand was scratched by a sharp canine of the dog. At this instant it occurred to me that the dog might have been rabid, for it had, as I remembered, run away from its mistress a few weeks before, and wandered about for several days. Further, the paralytic phenomena had made their appearance without preceding illness or known cause. Besides, it happened that in the neighbouring department rabies had been found to exist. The coincidence of these circumstances induced me to make a careful examination of the dog. We found extensive congestion of the mucous membrane, attributable to the action of the cyanide; otherwise there were no lesions. The contents of the stomach were normal.

According to several authorities the dumb form predominates among cattle. Dieckerhoff, however, from twenty-one observations, could not show that there was any difference from the disease as seen in the dog. An outbreak of rabies observed by me in 1898-9 bore the characteristics of the dumb form. A bull and a heifer were affected, and it is noteworthy that the animals had never left the byre, nor had rabies been observed in the district. The bull showed no other symptoms than paralyisis of the stomach, with diminished appetite, when first seen. Four days later considerable changes had occurred. The animal lay huddled in a heap on the floor. When the head was straightened out by any one, it remained in this position for about a minute and then sprang back, as the result of tetanic contraction. The neck muscles felt hard to the touch. The animal could not stand. There was a set staring gaze, continuous bellow-

ing, and tenesmus. There was no acceleration of respiration. Pulse was weak and somewhat increased in number; the temperature was almost normal (37·7° C). Rabies was suspected. Inquiry as to whether there had been a rabid dog in the neighbourhood led to a negative result. It appeared, however, that the proprietor had bought two bulls from a dealer in one of the Pomeranian market villages, and that both of them had died. The circumstances led me to suspect rabies as the cause of death, and also to assume that the disease had been imported along with the purchased stock. The bull died after seven days' illness. Post-mortem examination revealed great emaciation; the intestines were contracted, and contained a little fluid fæces. The mucous membrane of the abomasum was much redder than normal. The result of the post-mortem was unsatisfactory, but I held myself justified by the clinical signs in diagnosing rabies. To corroborate my conclusions I sent the head and neck to the Berlin Institute for Infectious Diseases. There two guinea-pigs were inoculated, and showed all the manifestations of rabies. I had an opportunity of seeing these inoculated animals, and the most striking feature was the widespread paralyisis. Dr. Marx, the superintendent of the section for the investigation of rabies, told me that diagnostic inoculations were always made intracranially.

Some time after the death of the bull a heifer fell ill. I found her lying on the ground, and only able to rise with great difficulty, and after repeated prodding with a stick. She showed symptoms of an acute indigestion, followed by signs identical with those noticed in the bull. Four days after my first examination of her she was completely paralysed, and after an illness lasting as long as that of the bull, she was found dead in the byre one morning. Inoculations were made as before, but, to my astonishment, with negative results. The uncertainty in the diagnosis of rabies demands that we exercise the greatest care in all cases. Diagnosis from post-mortem examination is one of the most difficult tasks. The noticeable conditions in the dead body have only a relative value. Among these is the presence of foreign bodies in the stomach. But it is well known that dogs will swallow wood, straw, &c. without being rabid. Still less can reddening or inflammation of the mucosa of the œsophagus and stomach be regarded as a significant sign. According to Babes and others, the most constant alterations are met with in the grey matter of the cord, these being hyperæmia, and the accumulation of embryonic cells of epithelial and leucocytic origin round the small vessels, as well as signs of proliferation and degeneration in the nerve cells. According to Elsenberg's investigations, the submaxillary and sublingual glands are in a state of congestion; the connective tissue contains many leucocytes, and the epithelial cells are granular, and frequently in a state of fatty degeneration.

Most important to practitioners, however, is the question whether rabies can be diagnosed from the post-mortem appearances. Apparently inoculation alone can settle the question.

It may not be out of place to point out that caution should be observed in making post-mortem examinations, as these are not without danger to the practitioner.

IRISH VETERINARY COLLEGE.[1]

BY W. A. BYRNE, ESQ., BOSCOMMON.

My first duty is to express my sincere thanks to the members of this Association for the great honour they have conferred in electing me to the highest position they have in their power to bestow. As a comparative junior in the profession, and as one of the rank and file of country practitioners, I am fully conscious of how small my claim is to any position of honour. Remembering, however, that on a certain occasion "The devil did grin, for his darling sin is the pride that apes humility," I will not unduly emphasise my own insignificance, but take my election as a graceful recognition of the small but earnest part I have taken in endeavouring to make this Association the influential and successful organisation which it has now become—filling a long-felt want, useful, helpful, and beneficial to the profession in Ireland.

What was the condition of the veterinary profession in Ireland even three short years ago? The most experienced, accomplished, and successful amongst us will have some grim memories of early years. We can all enter into the feelings of the newly qualified man settling down in a strange neighbourhood, confronted frequently with difficult cases, with no wide helpful veterinary literature available, and thrown again and again on his own slender resources to make the best of complications and phases of disease which no previous experience or college instruction helped him with. Cast-iron officialdom with its red-tape; local authorities saving the the rates; agricultural societies and shows; mean, dishonest, and litigious employers; disease never fixed and stereotyped, but protean and always new; am I not justified in saying that a veterinary surgeon in this country was an Ishmaelite in the land, his hand against every man, and every man's hand against him, and, worst of all, every other veterinary surgeon's hand against him also. We have, since this Association was initiated, gone a good way, I submit, to change all that. We have been enabled to safeguard threatened interests, to protect ourselves from aggression and injustice; and, most important of all, it has afforded us opportunities of getting to know one another, and so establishing and promoting that spirit of good feeling and good fellowship so important and desirable in every profession. For all this our grateful thanks are due to Messrs. David Fulton and M. J. Cleary of Mullingar, who founded this Association, and who have worked constantly and hard to make it successful and prosperous. They can also be credited with the restoration to sturdy and useful life of the older Irish Veterinary Medical Society. For many years it hibernated on the banks of the Liffey, like Goldsmith's traveller on the banks of the Po, "unfriended, melancholy, slow," but is now fully awake, alert, vigorous, prosperous, and most useful. Bearing on the question of professional organisations, perhaps I may quote from a recent address of a great Ulsterman, the Lord Chief-Justice of England, Lord Russell of Killowen. In addressing the United Law Society he stated that there were three distinct advantages to be derived from such societies,—"One was the feeling of good fellowship that they created amongst the members. A number of men aspiring to get on in life met together for mutual improvement, and by this

[1] Presidential Address delivered before the Irish Central Veterinary Association, April 20, 1900.

means rough edges were rubbed off, peculiarities and eccentricities were toned down; a standard of manners and morals was created which on the whole would be found to raise the level of thought and opinion amongst those who composed the membership of such a Society. The next point was that such societies encouraged the habits of reading and thinking. If they had a definite topic proposed for speech or essay, and if they applied themselves with purpose to endeavouring to master it, and to say something that was correct and comprehensive about it, they acquired an accuracy and definiteness of opinion upon that particular topic which would be most useful; therefore the habits of thinking and reading were cultivated and strengthened. His other point was the acquirement of the habit of ready speech." This statement by Lord Russell will commend itself to every one of us. Perhaps I may say in addition that such Associations as ours are of the greatest possible service in cultivating an ease of expression both in writing and speaking. In a profession so regrettably poor in clinical records as ours is, it is a constant subject of regret that vast stores of priceless knowledge, invaluable records of long experience, and interesting cases are lost because men are unwilling to record them in our journals, or make them the subject of communications to our Associations. May I then appeal to the members of the profession now present and all over the country who have not yet joined our Association to do so without delay. *Vis unita fortior* is our professional motto, and we should endeavour to act up to it. It is more urgently necessary that we should do so now than ever before in the history of our profession in this country.

Our secretary in the invitation to this meeting mentioned that I would allude in my address to the project for establishing an Irish Veterinary College. This is a most important subject to every one of us, and it may be well to lay before you a statement of what has been done, and the stage to which the scheme has reached.

The absence of an Irish Veterinary College formed for years one of the long list of injustices to Ireland which were perennially flaunted before the Government. It was stated that instead of young Irishmen having to go to London, Glasgow, or Edinburgh to acquire the necessary veterinary instruction, and incidentally to polish their accent, mend their morals, and improve their form at billiards, they should have an opportunity of attending a College in Dublin. It was plaintively stated that as we were capable of supplying commanders-in-chief, field-marshals, lord chief justices, and agricultural labourers to England, we should be able to run a little College of our own. Five years ago the Government was in an unusually tight place about Ireland, and it looked about for some convenient grievance which could be remedied with the least possible amount of harm and the least possible amount of good; and as a result it granted a charter for a new Irish College, making a grant of £15,000 to help to start it.

The members of the profession in Ireland were first made officially aware of the existence of this charter by a letter from the chairman of the Board of Governors of the new College to the Irish Veterinary Medical Association last October. In that letter we were informed that the Governors purposed drawing up a scheme for the working of the College, and wished to learn if we had any suggestions to make. I then saw the charter for the first time. It commences by enumerating three reasons why a College should be founded in Ireland. The three reasons are—(1) That as Ireland is a purely agricultural country, an impetus should be

given to the study of the diseases affecting domesticated animals by the establishment of a centre for the investigation of such diseases. (2) That as medical students seeking a diploma in State medicine have to go to England or elsewhere for instruction in the diseases of animals communicable to man, therefore the establishment of a Veterinary College would be likely to lead to researches being made into the origin and spread of epidemics amongst animals. (3) That the College would enable any person who wished to do so to acquire a smattering of veterinary knowledge, and so largely add to the already large number of pernicious quacks in the country. These are the only reasons given for the establishment of a Veterinary College in Ireland, and they are soberly set forth in the charter. Comment is unnecessary. The charter further on names the Governors of the College. They number thirty-two, of whom twelve are nominated by the Crown, twelve by the Royal Dublin Society, four by the Board of National Education, and four by the subscribers. There happen to be four veterinary surgeons on the Board, but there is no provision for the direct representation of the profession. It is unnecessary for me to enter in detail into the proceedings of the many meetings that have been held since October with reference to this matter. We waited on the Governors in search of information, and got none. A deputation from this Association waited on Mr. Plunkett, the Vice-President of the new Board of Agriculture, and pointed out the objectionable features in the charter, and the inadequate representation of the profession on the Board of Governors. He promised to give the matter his favourable attention. We formed a joint committee from the two Irish societies, and drew up a series of resolutions, which we forwarded to the Governors. And finally, at a meeting held in Dublin last night, we saw a copy of the scheme which has been provisionally adopted for the government of this new College. It appears from it that the crush of aspiring veterinary students is so tremendous that—to use an Irish bull—the College is to open in October, although it does not exist yet. There is no local habitation for the new institution, and the students are to go on how they can, as best they may, until suitable buildings are built. There are to be eight teachers and a principal; and the professors of veterinary medicine and of veterinary surgery are to receive a salary of £150 a year each. The evil system of "subscribers," so notorious in connection with the London College, forms an important part of the College scheme. For a payment of two guineas a year a subscriber is to have an amount of work done for him that practically destroys all private practice in a small, poor city like Dublin.

I confess that at this moment I am not convinced that in the interest of agriculturists, stockowners, veterinary students, or veterinary surgeons an Irish College is required. But if we are to have a College, it is apparent that it cannot be self-supporting. It must be State-aided, and in such an institution supported by the State we should insist on having adequate representation on the Board of Governors; we should insist that it should be able to educate students in a sufficient and satisfactory way, and pay more than tradesman's wages to its professional staff; but it should not be used for the indiscriminate manufacture of quacks; and above all and before all, that it should not destroy with one hand and create with the other—that this intolerable "subscribers" system should not be introduced into Dublin—that veterinary surgeons should not be robbed and ruined in order to assist in supporting a College for the education of new members of the profession.

DICHOTOMY AS A FACTOR IN TERATOGENY.

BY O. CHARNOCK BRADLEY.

"The work Dame Nature takes in hand
Is very seldom done by halves,
Yet sometimes, in a sportive mood,
She so makes men—and likewise calves."

"Turn, turn, my wheel! This earthen jar
A touch can make, a touch can mar."

PROBABLY no class of abnormal development is more common, more interesting, or more diverse in character than that produced by what is now known as Dichotomy. Dichotomy, or the bifurcation of parts ending in free extremities, is responsible for the production of very many, if not most, of the monsters encountered in veterinary obstetric practice. There is no veterinarian, however small his experience may have been, who has not at some time or other met with fœtuses possessed of an extra number of digits or limbs, or endowed with a superfluity of heads or tails. These abnormalities, along with many more, are the direct result of dichotomy.

Not only is dichotomy extremely common in occurrence, but it is exceedingly wide in its distribution. There is probably no section of the animal kingdom in which it may not show itself. Indeed it is, if anything, more common among the lower forms of animal life than among more highly organised beings. Nor is it unknown in the vegetable kingdom; the excessive production of parts—of leaves, for example—is perfectly familiar to the botanist. Dichotomy being so important a factor in teratogeny, no apology, therefore, is needed for its brief discussion.

The degree in which the terminal parts are involved in this reduplication varies very considerably. In some instances the excessive production of parts is little more than hinted at. Dame Nature, so to speak, has only threatened to give way to a sportive mood; she has not entirely fallen victim to the temptation to leave the beaten path. On the other hand, the erratic development may have resulted in the production of two totally different beings. We are all familiar with persons who are the unenviable possessors of supernumerary digits; the extra finger or toe being sometimes perfect and endowed with the full complement of phalanges, at other times imperfect and apparently merely an appendage to a fully formed and normal digit. This condition not infrequently obtains among domesticated animals. Numerous are the instances in which a horse has been born with more than the scant number of digits to which he is usually held to be entitled. Not a few of such cases have been described as examples of atavism; as cases of reversion towards the five-toed ancestor. That atavistic polydactyly may occur not only in the horse, but in any mammal provided with less than five digits, is not to be doubted; but it is to be questioned if all cases in which there are more than the normal number of toes are to be ascribed to reversion. If the observer be not too much entranced by the glamour thrown by palæontology over things teratological, he will confess that the majority of extra toes in the horse, as well as in like animals, can only be explained on the hypothesis that dichotomy has been at work. A careful examination will convince him that, in the majority of cases, there has simply been a splitting, partial or complete, of the ordinarily well-formed digits, and not an abnormally complete development of digits usually imperfect.

If dichotomy can result in the production of superfluous digits, there is no reason to doubt that extra limbs can be produced in the same way. Fœtuses with additional limbs are of too common occurrence to demand more than passing mention. We have all seen them, time and again. Much more interesting than additional limbs are multiplicity of heads. Monsters of the "Two-headed Nightingale" class are produced by an anterior dichotomy of the axis of the body. And, just as reduplication of limbs may be of varying degree, so may anterior dichotomy. For example, the head may be incompletely or completely reduplicated; there may be two heads set on one neck; or each head may be provided with its own separate neck; and so on until, in extreme cases, there are practically two creatures joined only by a common posterior extremity of the body axis. The "Two-headed Nightingale" was an example of this extreme cleavage; the bond of union between the two beings consisting in a common sacrum or coccyx. Instead of the cleavage extending from the anterior end of the body axis, it sometimes begins at the posterior end, thus giving rise to what has been called *duplicitas posterior*. As in *duplicitas anterior*, so in the posterior variety there are varying degrees. It is interesting to notice that there may be three hind limbs in these cases instead of four, as we should naturally expect. This is owing to the suppression of one of the extra limbs. Examples of such suppression are fairly common in the literature. There is one case which has been quoted more than once, but which will stand at least another quotation, if only on account of the unusual circumstances under which it was brought to light. Tuckerman (*Journal of Anatomy and Physiology*, Vol. XX.) describes a frog which, during some blasting operations, was somewhat rudely ejected from a crevice in a ledge of mica schist. The crevice was some 12 feet below the surface, and was only a few lines wide at its widest part. The frog had without doubt either hatched from an ovum or developed from a larva brought by a small stream of water which trickled through the crevice. The frog when relieved from its prison was found to be the possessor of an additional hind limb, which projected backwards between the normal limbs. This limb was attached to the symphysis pubis, and possessed the usual segments of femur, crus, and pes; it was furnished with two perfectly developed digits and a third imperfect one. This specimen is further remarkable from the fact that during life the frog appears to have had some control over the movements of its extra member. Usually the supernumerary limbs are quite

FIG. 1.—A two-headed foal. An example of anterior dichotomy. (Bland Sutton.)

beyond the control of their possessor. Cleland has paid special attention to this point, and has come to the conclusion that in those cases of posterior

FIG. 2.—Kitten with four pairs of limbs and one head. An example of posterior dichotomy.

dichotomy in which four limbs are produced, the functional limbs belong to *opposite* pelves. For example, the right limb of the right pelvis and the left limb of the left pelvis may be functional, while the left limb of the right pelvis and the right limb of the left pelvis are dwarfed or, as we have seen above, suppressed.

It should not be supposed that all cases of three limbs are due to suppression. Fusion of two of the limbs is a possibility, the fusion being partial or complete, more commonly the former. Gurlt figures such a case in a lamb.

The instances mentioned above are cases in which there has been partial cleavage of the axial structures. Double monsters, however, may be produced by the complete cleavage of these structures, the resulting embryos being connected by different parts of their bodies. Teratologists appear to have vied with helminthologists and dermatologists in their endeavour to manufacture names to fit the various forms produced by this variety of dichotomy. *Thoracopagus* is the name given to the class in which the connection is by means of the thoracic walls, *xiphopagus* where the xiphoid regions are joined, *craniopagus* when the two beings are united head to head, *ischiopagus* when the two pelves are fused. There is no especial magic in these names however; the cases are simply examples of extreme dichotomy, where the axial structures are completely reduplicated.

So far we have been considering cases in which the dichotomy has resulted in two equal creatures. But where the splitting is extreme, it is probably more customary for one fœtus to be imperfectly developed and

appear as a mere appendage to the other. Such cases were at one time explained by the supposition that there had been originally two fœtuses, but that one had become fused with and partially included in the other. The more rudimentary is known as the parasite; its host, if we may call it

FIG. 3.—Calf with a parasitic fœtus attached to the sternum. An example of unequal dichotomy. (Bland Sutton.)

so, the autosite. Apparently a very common situation, for the parasitic fœtus, so-called, to be attached to the sternal region of the autosite. Human beings with parasitic fœtuses so attached have been, more than once, exhibited in this country. Some, perhaps, will be able to call to mind the Chinese boy Ake, or the Hindoo Lalloo. Both of these boys had the trunk and limbs of a second individual attached to the sternum. We have seen above that, in cases where there are supernumerary limbs, the possessor has usually no control over his superfluous members. This is also the case where an individual is cumbered with the parts of a second being.

Now, if dichotomy can produce two individuals so flimsily united as, say, the "Two-headed Nightingale," there is logically no reason why two entirely separate individuals cannot be produced. And there can be no doubt that two embryos are fairly frequently produced from one ovum. So far as statistics go, it may be said that, roughly speaking, one in six cases of twins in the human subject results from the division of one ovum. Such twins are known as *uniovular*, and are distinguished from *binovular* twins (in which each twin develops from a separate ovum) by the circumstances that they share in a common placenta and chorion, and possibly

also in a common amniotic cavity. This sharing of a single placenta sometimes produces interesting results. One of the embryos may be stronger than the other, and so come to dominate the circulation. The weaker embryo has in this case no circulation of its own, and consequently no

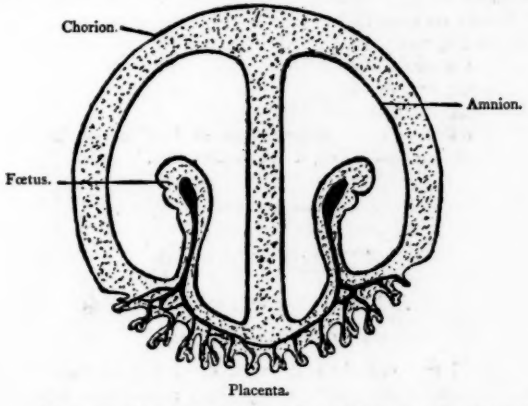

FIG. 4.—Diagrammatic representation of the relations of uniovular twins; there may be only one amniotic cavity instead of two, as shown in this figure. In binovular twins each twin is provided with its own chorion.

need for a heart; its heart therefore atrophies, and the result is an *acardiac monster*. The lower parts of the acardiac fœtus are nourished by blood pumped into them along the umbilical arteries; but the upper parts wither from their blood supply being deficient. In more extreme cases the whole of the weaker embryo is reduced to a shapeless mass.

Although the production of two embryos from one ovum may appear very strange, much of the strangeness and apparent unnaturalness disappears when we learn that there are animals in which the production of uniovular twins is the normal process. The ova of the worm, *Lumbricus trapezoides*, apparently always produce two individuals each. This was observed by Dugés as long ago as 1828, and has since been determined by other observers. Further, it has been shown by Hæckel that some larvæ may be divided artificially and multiple embryos result. He took some larvæ of the *Crystallodes rigidum*, cut them into two, three, or four pieces, and found that the pieces developed into separate individuals; the smaller pieces, however, grew rather slowly, and tended towards the production of monsters. There is much evidence, therefore, in support of the supposition that twins may be uniovular.

The exact manner in which double monsters are produced still affords ground for much speculation, and until more observations have been made we cannot consider any explanation as more than an hypothesis. Quite recently, Schultze (*Ziegler's Centralbl.*, Bd. x.), in considering the mode of origin of such monstrosities, states that it appears probable that they may arise in three different ways:—(1.) The ovum, on its escape from the ovary, may be provided with two nuclei, and become impregnated by two spermatozoa, two processes of segmentation resulting. (2.) On account of

over-maturity, the inherent tendency to division may lead the ovum to divide into two equal, or nearly equal, parts, each of which is subsequently impregnated. (3.) The ovum is normally impregnated, and goes on to the normal process of first division; but then something—it is not known what—happens, and each segmentation sphere goes on developing on its own account. It will be seen from these conclusions that there is yet much to be learnt regarding the production of what are known as double monsters. A great step has already been made in the recognition of dichotomy as the dominating factor, and in the clearing away of much confusing error which formerly obscured the question. No doubt in time we shall come to know what it is that disturbs the architecture of that which, like the potter's earthen jar, "a touch can make, a touch can mar."

Clinical Papers.

A HIGH TEMPERATURE.

BY HAROLD LEENEY, ESQ.

On June 13th I was called to an aged Guernsey cow which had calved nine days, was down and unable to rise, had a crooked neck and staring eyes, but appeared to be fully conscious when the usual tests were applied. Her pulse was almost imperceptible, respiration too rapid and shallow to be counted. She had been standing on the edge of a small orchard where the sun beat down upon her with tropical severity, and the trees being behind afforded her no shade. It was not until dusk that I saw her, and by the light of a lantern thought I had failed to read my thermometer correctly, and obtained a better light and again inserted it before accepting its reading as correct. It stood at the extreme top of the tube, which registers only up to 110° Fahr.

I prescribed a heart stimulant and a spinal sedative, and examined her next morning, when the temperature had fallen to 101·5. She was still unable to get up, but ate cut grass and was anxious about her calf. Later in the day the neck had become normal; she attempted to rise several times, but the difficulty seemed to be in the lumbar region. I gave her an ounce of pot. bromide, and a saline aperient (as the bowels had not acted), directed the attendant to stimulate the loins with lin. saponis. Next day she was comparatively well. What was the matter with her? Was it deferred parturient apoplexy or sunstroke, or a mixture of both? In my student days a cow belonging to the venerable principal of the college dropped with milk fever (or whatever it is now called) on the tenth day, and died, despite the efforts of the most experienced cattle-man in this country and all his satellites.

A PECULIAR ACCIDENT.

BY THE SAME.

A foal a month old hurt its knee, and in order to foment was haltered. Resisting the restraint of the halter it fell over backwards, and was unable

to get up at the time I visited it. A hole large enough to admit my finger-point was found at the poll, and diagnosis of fractured occiput beyond all possibility of doubt. The animal presently got up and staggered round the box, was restrained until an aperient could be given, and the wound treated antiseptically. It was quite unable to see, but during the next two days took nourishment, and felt its way round the dam, and took in the measurement of the box without many bumps against its head. Amaurosis continued and tetanus supervened.

INHERITED MALFORMATION.

BY JNO. J. LODWICK, ESQ., LLANGOLLEN, N.W.

LAST year a number of Welsh ewes were served by a Welsh mountain ram. He was slaughtered by the butcher last month, when it was found that he possessed only one kidney. His progeny are now being slaughtered; they also have but one kidney each. Being an attentive reader of your admirable Journal, and not having seen any similar case recorded therein, I am prompted to furnish you with the foregoing *facts*.

TAXINE POISONING.

BY JAMES M'PHAIL, M.R.C.V.S., INSPECTOR OF MARKETS, EDINBURGH.

CASES of poisoning through eating yew leaves or twigs occur occasionally in veterinary practice, and in the abattoirs we periodically have them sent in. Of course only the morbid lesions can then be seen, but the following note regarding such an occurrence in connection with young stock may be of interest, especially as the time for trimming hedges, trees, &c. will shortly be here.

History.—Two yearling colts had been bought at one of the annual sales of one of our large stock farms, and had been sent on home by the owner. Pending his arrival they were turned into a small park on the estate. When he arrived what was his astonishment to observe that both of them were undoubtedly very ill, one of them staggering all about the place, and the other standing gazing stupidly at its neighbour. Assistance of course was promptly called in.

Symptoms.—On arrival one of the animals was almost at its end; it was staggering about like a horse with volvulus, with a dull, drunken-looking expression, and patches of wet on its coat. The animal was very cold, its temperature was 98·5° F.; it was blowing, and had evidently difficulty in breathing, but the pulse was quite perceptible. This animal died in about ten minutes after arrival, and undoubtedly succumbed to paralysis of respiration, as the heart was distinctly beating after the breathing had stopped. Our energies were directed towards endeavouring to save the other one, which did not show the same distressing symptoms, but, judging from its dull, stupid look, was evidently suffering from the noxious food. When made to move, it staggered about and started to blow.

Treatment.—Assisted by four men, the colt was conveyed into a nice loose-box with plenty of short straw. The animal was steadied by the men, who held up its head with their hands, and a mixture of a pint of linseed oil, 2 ounces of chlorodyne, 2 ounces spt. æth. nitrosi (these ingredients emulsified by shaking with a little sodæ bicarbonatis dissolved in

water) was poured over its throat. A watch was set to see that the straw did not get round the animal's legs and trip it up. The case was seen again about midnight; there was not much improvement, and half a pint bottle of whisky was given in half a pint of linseed oil. The next forenoon the animal seemed a little better, and a stimulant and chlorodyne were given, as signs of colic were shown. The third day the animal seemed to be much improved, and could be walked about without any bad signs, but there was costiveness, so a full dose of oil was given, and by night this had the desired effect, as the animal scoured freely, but an opiate had to be given the next day as considerable pain was shown. The subsequent treatment consisted of bottling over the following powders suspended in linseed gruel:—

℞. Sodæ bicarbonatis ʒij.
Bismuthi subnitratis ℈ij.
Acidi tannici ʒiij.
Farini q.s. ut fiat pulv.
M. ft. pulves xij.
Sig. i. bis in die.

It is satisfactory to state that the animal entirely recovered.

Autopsy.—In the post-mortem examination of the dead animal there was found intense congestion of the stomach in patches, some of which were almost purple in colour. This condition extended into the bowels themselves. The liver and spleen were engorged with blood. The stomach was half filled with semi-digested twigs and leaves of the *Taxus baccata;* it had apparently been the gardener who had put them in the park with the intention of burning them, but unfortunately such intention had not been carried out.

Reports.

INTERIM REPORT BY PROFESSOR M'CALL, VETERINARY INSPECTOR, GLASGOW, TO THE EXECUTIVE COMMITTEE OF THE LOCAL AUTHORITY OF GLASGOW UNDER THE DISEASES OF ANIMALS ACTS, 1894-96.

HAVING received authority in the month of March last to conduct a series of experiments with the view of demonstrating the utility of mallein in the treatment of glanders in horses, I now beg to report briefly on the work which has been undertaken, and the results obtained until the present time.

For the purposes of observation and experiment, I arranged with Mr. Duncan, the Manager of the Glasgow Tramway and Omnibus Company, that I should have access to 27 horses which were stabled and worked by themselves from Crownpoint, and been there and under observation for more than twelve months.

Eighteen of the 27 horses referred to were drafted out of the stud at the dates given, in consequence of having reacted to mallein, and been declared by the mallein test affected with glanders. The remaining nine horses were added to the number after being tested with mallein and failing to react, the object being to see if these nine horses would contract glanders by being housed and worked with the animals which had been declared glandered by the mallein test.

I now submit a copy of the tabulated statement of horses tested with mallein at Crownpoint Stables and results :—

TABULATED STATEMENT OF HORSES TESTED WITH MALLEIN AT CROWNPOINT STABLES, AND RESULTS.

Date.	No.	Temp.	Date.	Temp.	Date.	Temp.	Date.	Temp.	Date.	Temp.	Date.	Temp.	Date.	Temp.
1899,														
Feb. 9	10,135	104·4	May 11	104·4	June 22	104·1	July 27	102·3	Aug. 17	100·1	Sept. 14	101·2		
,, 9	9,376	105	,, 11	104·3	,, 22	105	,, 27	104	,, 17	102·1	,, 14	102·4	Oct. 5	101·1
,, 16	9,691	105·1	,, 11	103·1	,, 22	104	,, 27	102·3	,, 17	100·2	,, 14	100·2		
,, 16	8,453	102·3												
,, 23	9,367	103·2	,, 11	101·1	,, 29	101·1	Aug. 10	102·1	Sept. 14	100·3				
,, 23	9,951	104·4	,, 11	103·2	,, 22	105·1	July 27	103·3	Aug. 17	100·2	,, 14	102	,, 5	100·4
Mar. 2	10,265	103·3	,, 11	103·1	,, 22	102	Aug. 3	100·4						
,, 2	8,291	104·4	,, 11	103·2	,, 22	104·1	July 27	104	,, 17	100·3	,, 14	100·4	,, 5	
,, 9	9,283	105	,, 11	104·3	,, 22	104	,, 27	102	,, 17	100·2	,, 14	101·1		
,, 9	10,110	105	,, 11	102·4	,, 22	102	Aug. 3	102·4	Sept. 14	100·2				
,, 9	1,911	105	,, 11	103	,, 22	101·2	,, 3	100·1						
,, 23	9,662	102	,, 11	101·2	,, 29	101·4	,, 10	100·4						
April 6	9,270	102·2	,, 11	101·2	,, 29	100·2	,, 10	100·2						
,, 6	2,474	102·4	,, 11	101·2	,, 29	102·1	,, 10	101·2						
,, 6	9,644	102·1	,, 11	100·2	,, 29	100·2	,, 10	100·3						
,, 6	10,512	104	,, 11	104	,, 22	105·1	July 27	104	Aug. 17	100·3	,, 14	101·3	,, 5	100·4
,, 20	76	101·4	,, 11	100·3	,, 29	100·3	Aug. 10	100·4						
,, 20	9,069	102·2												
,, 27	9,750	104	,, 25	104·3	,, 29	100·1	,, 3	102·2	Sept. 14	101·3				
,, 27	10,458	104	,, 25	102	,, 29	100·4	,, 3	100·1						
,, 27	294	104	,, 25	100·2	,, 29	100·1	,, 10	101						
May 4	139A	103												
,, 4	2,434	103	,, 25	100·3	,, 29	100·3	,, 3	100·2						
,, 11	10,516	105	,, 22	105·1	,, 27	105	,, 17	101·3	,, 14	101·3	Oct. 5	102		
,, 11	8,154	105·3	,, 22	105·1	,, 27	104	,, 17	102·3	,, 14	102	,, 5	101·1		
,, 25	10,306	102·3												
,, 25	10,530	102·1												

The chart explains itself, and from it many interesting facts may be adduced. Some horses to the second inoculation of mallein did not react, while others reacted to a third and fourth, and in some instances the animals remained glandered by the test for a period of six months, and then ceased to react.

All the horses referred to have been at work regularly, and with the exception of two animals (viz., 10,135 and 9283, which I purchased for experimental purposes) are still at work, and have never exhibited a single clinical symptom of being glandered; and this applies equally to the horses which never reacted and those which reacted for months.

It does seem strange that one dose of mallein should remove a horse from the category of a glandered to that of a non-glandered animal, but as some animals are not removed from this category until several injections have been made and a long period of time has elapsed, this, in my opinion, lends force to the view that "mallein," like many other curative agents, acts not only according to the quantity administered, but also according to the condition of the patient and the stage of the disease. But, and while it is the fact that these 27 horses have ceased to react to mallein and present no visible symptoms of being glandered animals, it does not follow that they are cured of the disease, and I shall now proceed, under the head "Experiments," to deal with that aspect of the subject.

Experiment No. I.

Brown mare from Maryhill, received 14th March 1900.

This mare is visibly affected with glanders, but has never been subjected to the mallein test. She has been in the service for seven years, and consequently is well worn out. There are farcy buds on both legs above the hocks, and at the back of the hips, and the sub-maxillary glands are indurated, but she has no discharge from her nostrils, and the farcy buds have only appeared within the last three days.

Her temperature was taken for four days, and was as follows:—

15th March,	.	Morning,	$100\frac{2}{5}$	.	Evening, $100\frac{2}{5}$
16th „	.	„	$100\frac{4}{5}$	.	„ $101\frac{3}{5}$
17th „	.	„	$101\frac{1}{5}$	.	„ 102
18th „	.	„	$101\frac{1}{5}$	.	„ $101\frac{4}{5}$

She was inoculated subcutaneously on the left side of the neck at 11 p.m. on 18th March with $2\frac{1}{2}$ c.c. = 45 minims of mallein diluée, as prepared and supplied by the Pasteur Institute. Her temperature, taken on the 8th, 10th, 12th, and 14th hours after inoculation, was—7 A.M., 101; 9 A.M., $102\frac{2}{5}$; 11 A.M., $103\frac{2}{5}$; 1 P.M., $103\frac{2}{5}$.

There was a fairly extensive local swelling at the point of inoculation, and consequently the animal was considered to have reacted to the mallein test, and thereby declared glandered.

She was kept at the Sanatorium under surveillance until 31st March (a fortnight), and during this time she ate well, and did not lose much in bodily condition. On 31st March she was slaughtered, and a minute and careful post-mortem examination made.

Naked Eye.—The lungs showed a few nodules of small size in various stages of development (none, however, being in the early or hæmorrhagic stage), and the spleen showed one nodule. The nasal cartilage, trachea,

liver, kidneys, &c., showed nothing abnormal. The skin was affected with farcy, four buds being found about the flanks and above the hocks.

Plates.—Plate cultures were made in glycerine agar-agar, but the results were negative as regards finding the bacillus mallei.

Microscope.—Slides, stained and unstained, were made and examined, but they showed only cocci, and none of the bacilli of glanders.

This case demonstrates that an animal clinically affected with glanders responds to the mallein test, and that the mallein test is invaluable, and should always be conjoined with plate cultivations and microscopic examinations, seeing these latter methods may fail in detecting (as in this case) the presence of the bacillus mallei in the infinitesimally small portion of tissue which can be dealt with.

Experiment No. II.

A piece of lung containing a small nodule was brought to the College from Hodgkinson on 15th March (this piece of lung was from a horse said to have been killed by the Corporation Tramways Department for experimental purposes).

On Saturday, 17th March, a guinea-pig was inoculated subcutaneously in a pouch on the abdomen with two small pieces of the caseated nodule, the wound being closed with flexile collodion and wool.

On same date two plate cultures were made on glycerine agar-agar and put into the incubator.

The guinea-pig remained in perfect health, and the wound closed without suppuration. On April 27th it became affected with inflammation of the bowels, due to change of feeding, and died. Post-mortem showed nothing of a glanderous nature.

Plate cultures produced numerous colonies of staphylococci, but were negative as regards the bacillus mallei.

The animal from whose lung the glanders nodule was taken, I should suppose, had been tested with mallein, and some time thereafter slaughtered. If so, here again the mallein test demonstrates its value and reliability as a diagnostic agent.

Experiment No. III.

Dark brown horse, No. 9283, received at the Sanatorium on 15th March 1900.

This is the horse which, by a reference to the chart, will be found to have, on 9th March 1899, when inoculated with mallein, registered a temperature of 105°, in May 104·3°, in June 104°, in July 102°, in August 100·2°, and in September 101·1° The position of this horse then is, that from March 9th till after the 22d June, or, say, three months, he remained a declared glandered horse by the mallein test, but by the same test he had recovered on 27th July, and had remained so for the past eight months. On his receipt then, on 15th March, we prepared him for being again subjected to the mallein test, and accordingly his temperature was taken morning and evening for four days, with the following results:—

15th	March,	.	Morning,	$100\frac{2}{5}$	.	Evening,	$100\frac{3}{5}$
16th	„	.	„	$100\frac{4}{5}$	.	„	$100\frac{4}{5}$
17th	„	.	„	$100\frac{3}{5}$	.	„	$100\frac{3}{5}$
18th	„	.	„	101	.	„	$100\frac{2}{5}$

The temperature being normal, and the animal otherwise a fit subject, on 18th March he was inoculated subcutaneously in the left side of the neck at 11 P.M., and his temperature taken eight, ten, twelve, and fourteen hours thereafter:—

19th March—7 A.M., $100\frac{3}{5}$; 9 A.M., $101\frac{3}{5}$; 11 A.M., $101\frac{2}{5}$: 1 P.M., $100\frac{3}{5}$.

The local reaction or swelling of the inoculated part was very slight, and no lameness nor constitutional disturbance of any kind was noticeable. He was, therefore, regarded as having passed the test and free of glanders.

On 22d March he was chloroformed, and bled to death in the dissecting-room of the College, and a careful post-mortem examination made. The post-mortem yielded five nodules:—

Three nodules from the lung (caseated and non-active looking).
One nodule from the lung (calcareous).
One nodule from the inguinal lymphatic glands (caseous).

The trachea, liver, spleen, nasal cartilage, skin, and other parts of the body appeared healthy. The five nodules were cut out and carefully crushed, then mixed together in a sterilised vessel.

Plate cultures in glycerine agar-agar were made, and yielded colonies in abundance, but all negative as regards bacillus mallei.

A yellow and brown guinea-pig was also inoculated, 23d March, subcutaneously (in a pouch made in the abdominal region between the skin and cell tissues) with $1\frac{1}{4}$ c.c. = 23 minims of the liquid from the mixed and broken down nodules.

A donkey (procured for this purpose, and previously inoculated with mallein and passed as free from glanders) was also, 23d March, inoculated subcutaneously in the left side of the neck with $4\frac{1}{2}$ c.c. = 81 minims of the same liquid, and also a few solid shreds of the nodule tissue.

The guinea-pig was closely observed, but nothing either local or constitutional transpired as a result of inoculation. The wound healed without suppuration, and the guinea-pig remained in perfect health for a month, *i.e.*, till 23d April. On this date the guinea-pigs (four in number) all received a quantity of green food. They became affected with diarrhœa, and all died within ten days. The inoculated guinea-pig died on 28th April, and a post-mortem showed muco-enteritis to have been the cause of death. There were no glanders nodules to be felt or seen in any of the viscera.

The donkey (two days after) at the point of inoculation on the neck developed a hard swelling about the size of a bean. It was not painful, and there were no signs of inflammation in or discharge from the part, and she was feeding well. It was supposed that the swelling was due to injury sustained to the skin while puncturing it; the skin being so extremely tough and thick, great pressure had to be used to get the needle to pierce it. The swelling gradually increased till it obtained the size of a walnut, and ultimately formed an abscess. On 6th April the abscess was lanced and its contents received into a sterilised vessel. To the naked eye the contents of the abscess looked like partially coagulated and creamy pus. On microscopic examination and cultures nothing but cocci were obtained. During all this time the donkey's temperature was taken twice daily, and the chart runs as follows:—

Date.	Temp.	Date.	Temp.	Date.	Temp.	Date.	Temp.
Mar. 23	100½, 100⅝	Mar. 24	100⅝, 100⅝	Mar. 25	100⅝, 100⅝	Mar. 26	100, 100½
,, 27	100⅝, 100½	,, 28	100½, 100	,, 29	100, 100½	,, 30	99⅝, 100
,, 31	100, 99⅝	April 1	99⅝, 99⅝	April 2	99⅝, 100	April 3	100⅛, 100
April 4	100, 99⅝	,, 5	99⅝, 100	,, 6	99⅝	,, 7	99⅝, 100
,, 9	99⅝, 99⅝	,, 10	100, 99⅝	,, 11	99⅝, 100	,, 12	99½, 99⅝
,, 13	99⅝, 99⅝	,, 14	99⅝, 99⅝	,, 15	99⅝, 100⅛	,, 16	99, 99½
,, 17	99, 99⅝	,, 18	100, 100	,, 19	99⅝, 100	,, 20	101, 100⅛
,, 21	101, 100⅝	,, 22	101, 100	,, 23	100, 100	,, 24	99⅝, 100
,, 25	99½, 99⅝	,, 26	100, 100	,, 27	100⅛, 100	,, 28	99⅝, 100
,, 29	101, 100⅝	,, 30	101⅜, 101	May 1	101, 100⅝	May 2	101⅛, 101
May 3	101⅜, 100⅝	May 4	100⅝, 100½	,, 5	100, 100	,, 6	99⅝, 100
,, 7	100, 100½	,, 8	100½, 100	,, 9	99⅝, 99⅝	,, 10	100, 100
,, 11	99½, 99⅝	,, 12	99⅝, 100	,, 13	100, 100	,, 14	100⅝, 101

On 14th May, the same donkey was again inoculated at 11 P.M. with 35 minims of mallein, and temperatures taken every two hours after, from the 8th to the 14th hours—May 15th, 7 A.M., 99½; 9 A.M., 99⅗; 11 A.M., 99⅖; 1 P.M., 99⅖.

Local reaction was so slight as to be hardly visible, and no constitutional disturbance was exhibited.

The donkey was killed on 22d May, and a careful post-mortem made, but no glanders nodules or disease of any kind was found to exist.

The results of the experiments in connection with this horse, No. 9283, proved to a demonstration that he was for a length of time a glandered horse, but for a period of eight months prior to his being slaughtered he had recovered from the disease and was a sound animal.

Experiment No. IV.

Bay mare, No. 10,135, received on 15th March 1900 from Crownpoint. This is the mare which by a reference to the chart will be found to have on 9th February 1899, when inoculated with mallein, registered a temperature of 104·4; in May, 104·4; in June, 104·1; in July, 102·3; in August, 100·1; in September, 101·2. The position of this mare is much similar to that of the horse in the previous experiment, viz.—for a period of four months a glandered horse by the mallein test, and for eight months subsequently recovered from the disease.

The temperature was taken for four days after arrival, and was as follows:—

15th March,	Morning,	100·3	Evening, 100·3
16th ,,	,,	100·2	,, 100
17th ,,	,,	100·3	,, 100·3
18th ,,	,,	100·3	,, 101·2

She was inoculated at 11 P.M. on the 18th, subcutaneously on the left side of the neck with 2½ c.c. = 45 minims mallein diluée, and her temperature taken on the 8th, 10th, 12th, and 14th hours after inoculation was:—

March 19th—7 A.M., 100; 9 A.M., 100·3; 11 A.M., 100·2; 1 P.M., 100·1.

Local reaction was slight, and constitutional disturbance unnoticeable.

She fed well, and accordingly she was declared to have again passed the mallein test.

It was now determined to inoculate the animal with material obtained from a glandered horse, and which was done, the object in view being to see what additional power, if any, the animal possessed, or might be supposed to possess (through the frequent inoculations of mallein to which it had been subjected), in resisting the invasion of the glanders organism, but the animal's health having broken down, it was decided to have a fresh subject, and to use for inoculation purposes a pure culture of the glanders bacillus; and having secured a pure culture, I am now on the eve of prosecuting that line of experiment.

In submitting this report, I desire it to be distinctly understood that the experimental work which I had set myself to do has not been completed, and that it will take some time to complete, and until it has been completed I do not feel inclined to suggest to the Local Authority that any alteration be made in their line of procedure in dealing with outbreaks of this disease.

JAMES M'CALL, F.R.C.V.S.

VETERINARY COLLEGE,
BUCCLEUCH STREET,
GLASGOW, 12*th June* 1900.

REPORT BY GENERAL MANAGER OF THE GLASGOW CORPORATION TRAMWAYS ON OUTBREAK OF GLANDERS, IN CONTINUATION OF HIS MEMORANDUM OF 7TH FEBRUARY 1900.

IN February last considerable interest was roused by a Report, made by Mr. Young, General Manager of the Glasgow Corporation Tramways, on certain experiments he had caused to be performed with regard to the effect upon glanders of repeated inoculations with mallein. It will be remembered that, after certain tests had been carried out by the Local Authority Inspector, the Departmental Veterinary Surgeon was instructed to retest the whole stud, with the result that 278 horses in all reacted. These animals were repeatedly retested thereafter at intervals of not less than three weeks, and the very interesting result brought out that there was a rapid decrease of reacting animals. On applying the test for the sixth time only one horse reacted; and at the seventh testing no animal showed any indication of the disease. These results were so interesting and of such importance, as pointing towards the possible curability of glanders, that further investigations were decided upon. The most important point to decide, of course, was whether the inoculation of mallein had cured the disease. The results of the subsequent observations are given in a further Report by Mr. Young, which was published on the 1st of June. The following is the Report:—

"In my Memorandum of 7th February last I gave a full account of the outbreak of glanders in the stud (4439 horses) of the department, in July 1899, and also an outline of the methods which were adopted for having the whole stud systematically tested with mallein by our own Departmental Veterinary Surgeon. I stated that the result of the first mallein test was

that 278 horses had reacted. I also gave the results of further tests of these 278 cases, as follows:—

1st test,	278	reacted.
2nd „	49	„
3rd „	9	„
4th „	5	„
5th „	2	„
6th „	1	„
7th „	0	„

"It will be seen from the above statement that, after the seventh test, every animal had ceased to react. The question still remaining to be answered, however, was, were all or any of these 278 animals now free from the disease?

"In this report I propose to give the results of the steps which have been taken to give a satisfactory answer to this question.

"As a result of our later periodical tests, none of the animals which were found clear on the third mallein test have reacted to further tests. They are all doing full work, maintaining their condition, and are, to all appearances, in perfect health.

"This reduces our observations to the nine horses which reacted on the third test. Of these nine three became clinically affected—one after the third, one after the fifth, and one after the sixth test—and were consequently destroyed. The remaining six, two of which had reacted to the fourth test, have, since the date of my Memorandum, shown no reaction to further tests. Four of them are doing regular work, and seem perfectly healthy; the other two, which looked equally healthy, were among the animals selected to be destroyed for demonstrative purposes.

"It was decided to select for the purposes of demonstration seven animals which had reacted as under:—

1 animal which had reacted once.
1 animal which had reacted once, and on second test was suspicious.
3 animals which had reacted twice.
1 animal which had reacted three times.
1 animal which had reacted four times.

"In the whole of these cases our Departmental Veterinary Surgeon (Mr. Thomas B. Hamilton), assisted by several professional gentlemen (Dr. Buchanan being always present), made a most careful and thorough post-mortem examination. Every doubtful or suspicious part was excised and submitted for report to Dr. Buchanan, Bacteriologist to the Corporation, and to Professor M'Fadyean, Principal of the Royal Veterinary College, London. The reports of Mr. Hamilton, Dr. Buchanan, and Principal M'Fadyean, which are given herewith, bring out two important points:—

"1. That the animals in question had previously been affected with glanders.

"2. That the specific bacillus could not at the time the animals were killed be detected in any one of the cases, either by microscopical or cultural methods, and that the animals must consequently be considered to have been free from the disease.

"I should state that the time which had elapsed between the latest mallein test and the slaughter of the animals varied from one to eight weeks. In the last two cases the period was seven weeks. Perhaps these two may be considered the most important, as the animals had reacted to mallein three and four times respectively.

"Seeing the result has been practically the same in all the seven representative cases, it may be taken as clearly demonstrated that these animals had become free from the disease, and it may fairly be concluded that the animals from which these test cases were drawn are likewise free from the disease. It does not seem to me that this conclusion is affected by the fact that three animals out of the 278 broke down during the process of further testing by mallein. It may be that the disease was further advanced in these cases before the mallein was applied. Very probably a larger percentage would break down in cases where the horses are not so well stabled, fed, and generally cared for as ours are.

"In any case, the results seem to justify the position we have taken up, and we can no longer accept the theory that glanders is incurable, or endorse the policy of slaughtering every animal which has reacted once to mallein. So far as our tests indicate, animals which are in good seasoned condition may react once, twice, thrice, or even four times, and still make good recoveries.

"Looking to the history of this outbreak, there can scarcely be any doubt that this disease is much more easily transmissible from animal to animal than has been generally supposed, and that a stud may be widely affected with only very slight, if any, outward indications. It is, therefore, most important to have the earliest possible knowledge of the bacillus. I would, therefore, repeat here what I ventured to suggest in the last paragraph of my Memorandum of 7th February last, which suggestions have been approved of by the Town Council, namely:—

"If the disease is to be controlled or cured, it must be very important to discover and attack it in its early stages, and it is obvious that, for the discovery of cases and studs affected, reliance must chiefly be placed upon post-mortem examination at the knackeries. This seems to point to (1) having all knackeries municipalised or under public control; (2) having all horses for slaughter and carcases in each district disposed of through the public knackery; and (3) having arrangements made whereby at each such knackery the regular examiner could, on the appearance of any suspicious case, call in an expert bacteriologist for assistance and advice."

The following further suggestions seem to arise from the results now reported:—

(1) When a case has been discovered, mallein should be forthwith applied to every horse which has been in the same stable, or otherwise in contact with the affected animal, and the movements of all such horses should be under strict supervision and control.

(2) The mallein test should be repeated upon reacting animals at proper intervals.

(3) After an animal has reacted on three or four successive tests—the number of tests depending, of course, upon the condition of the animal—it might be destroyed, and the owner compensated.

I believe that, under some such system of detection in the early stages

as has been indicated, cases showing three or four reactions would soon become very rare and exceptional.

In my opinion, if powers were obtained to carry out these suggestions, they could be enforced by the Local Authority without causing any more than the most trifling interference with the working of the animals."

Mr. Thomas B. Hamilton, M.R.C.V.S., the Departmental Veterinary Surgeon, makes a report upon the three animals (out of the nine reacting to the third test) which developed clinical symptoms, and upon the seven horses killed for demonstration.

The three horses clinically affected all showed signs of glanders lesions in the lungs; in one the glanders bacillus was found.

Further reports by Dr. Buchanan and Professor M'Fadyean are appended. Dr. Buchanan concludes, from microscopical and cultural examinations—(1) that the lesions of glanders existed in them all; (2) that no active glanders bacilli were present; and (3) that the lesions were of a chronic nature, undergoing extinction by the process of fibroid transformation.

Professor M'Fadyean could only find lesions with the appearance of old glanders nodules in three cases. In the other cases, he says, the lesions were not characteristic of glanders. Cultivation and inoculation experiments were negative in every case.

It will be noted that Dr. Buchanan and Professor M'Fadyean do not quite agree in their conclusions. The former is of opinion that glanders lesions existed in all the cases; the latter is more guarded, he finds "two of the pieces from 3623 and one piece each from the other two cases contained lesions, *with the appearance of old glanders nodules*" (the italics are ours).

The results of the investigation are of the utmost importance, and the experiment should be repeated as soon as possible in some other stud where glanders occurs. The best thanks of the profession are due to Mr. Young for the manner in which he has superintended a very valuable piece of work.

Royal College of Veterinary Surgeons.

THE 87th annual general meeting of the members of the Royal College of Veterinary Surgeons was held at 10 Red Lion Square on Wednesday, June 6th. Present:—Mr. James Fraser, president, in the chair; Professors M'Fadyean and Penberthy, General Sir Frederick Fitzwygram, Vet.-Colonel Lambert, Vet.-Major Owles, Messrs. Allan, Banham, Barrett, Bower, Blakeway, Burchnall, Dawes, Green, Hill, Hunting, Jacobs, M'Kinna, M'Cormack, Rowe, Rutherford, Samson, Simpson, Southall, Stroud, Trigger, Villar, Wilson, and Wragg.

The SECRETARY read the notice convening the meeting.

On the motion of Mr. Simpson, seconded by Mr. M'Cormack, the minutes of the last annual general meeting were taken as read and confirmed.

The PRESIDENT called upon the Secretary to read the report of the scrutineers.

The SECRETARY read the report as follows:—

Elected.—Mr. Simpson, 815; Professor M'Fadyean, 780; Mr. Trigger, 670; Vet.-Colonel Lambert, 638; Mr. Byrne, 535; Mr. Winter, 524; Mr. Villar, 524; Mr. Wartnaby, 477.

Not Elected.—Professor Mettam, 449; Professor Shave, 391; Mr. M'Kinna, 316; Mr. Hunter, 311; Mr. Armstrong, 264; Mr. Awde, 242; Mr. M'Callum, 182; Mr. Reekie, 148.

The PRESIDENT—I declare the first eight gentlemen whose names have been read out by the secretary to be duly elected. A copy of the report has been sent to the postal address of every member of the profession, and I presume that it is now in your hands. It is for you to deal with it as you think proper. I will ask some gentleman to move that it be received, and then it will be open for discussion.

Mr. VILLAR moved, and Vet.-Major OWLES seconded, "That the report be received."

The PRESIDENT—I now beg to move that the report be adopted.

Mr. MULVEY seconded the motion.

The PRESIDENT—Does any gentleman wish to say anything before I put the resolution? If not I will put it at once.

The motion for the adoption of the report was then put and carried unanimously.

The PRESIDENT hoped that as many members as possible would turn up at the annual dinner. That institution was now in a somewhat doubtful position, and unless it was more liberally supported than it had been in previous years, he was afraid it would have to be discontinued.

Mr. SIMPSON said that it happily fell to his lot by reason of his position upon the poll that day to be able to propose a hearty vote of thanks to the scrutineers. The scrutineers, as he knew from past experience, had to work very arduously to arrive at their decision, and it frequently happened that not a few of the gentlemen who had been selected by the Council failed to turn up to do their duty as scrutineers. He begged to move "That a hearty vote of thanks be accorded to the scrutineers for their services."

Professor M'FADYEAN seconded the motion, which was agreed to.

Mr. MULVEY—Gentlemen, I have a very pleasing duty to perform, namely to ask you to pass a hearty vote of thanks to our President for the very efficient manner in which he has performed his duties to-day.

Vet.-Col. LAMBERT seconded the motion, which was carried by acclamation.

The PRESIDENT—Gentlemen, I do not suppose that any occupant of this chair has had an easier duty than I have had this morning, and I thank you very much indeed for the recognition of the services I have been able to render. That, gentlemen, concludes the business of the meeting.

Glasgow Veterinary College.

THE examination of the Royal College of Veterinary Surgeons took place on Friday 18th, Wednesday 23d, and Saturday, 26th May.

The following students passed the "A" or first professional examination:—J. W. Tait, Bowling; P. Tubridy, Kilrush, County Clare; Roy Bickerton, Denny; James Taylor, Paisley; H. M'Intyre, Greenock; F. M'Shane, Dunkineely, County Donegal.

The following passed the "B" or second professional examination:—Geo. W. Weir, Glasgow; Jas. M'Farlane, Inverness; (1st Honours) Neil H. MacAlister, Tarbert, Argyllshire; (2d Honours) Jas. Wallace, Mauchline, Ayrshire; (1st Honours) J. F. Craig, M.A., Duntocher, Dumbartonshire; H. G. Rogers, Liverpool.

The following passed the "C" or third professional examination (four years' course):—A. P. Logan, Ballyclare, County Armagh; W. G. Forbes, Old Kilpatrick; (2d Honours) W. M. Ferguson, Glasgow; Albert M'Dowell, Ballynahinch, County Down; J. H. M'Laren, Glasgow; Arch. Logan, Glasgow; John Allan, Glasgow; F. P. Beck, Milford, County Donegal; John Danskin, Cardenden, Fifeshire.

The following student passed the first or theoretical portion of the "C" or third professional examination (three years' course)—H. Cameron, Glasgow.

The following passed the "D" or final examination (four years' course) and received the Diploma of the Royal College of Veterinary Surgeons:—John P. Small, Kilkeel, County Down; John Baird, East Kilbride.

The following passed the second or practical portion of the "C" examination (three years' course), and received the Diploma of the Royal College of Veterinary Surgeons—H. Cameron, Glasgow.

Medals granted by the Highland and Agricultural Society, the late Professor Allen Thomson, of London, and Principal M'Call, and Certificates of Merit were awarded in different branches of study as follows:—

MEDICINE AND SURGERY (Horse)—Written Examination.—*Silver Medal*—John P. Small. *1st Class Certificates*—John Baird, J. Montgomery, H. Cameron.

MEDICINE AND SURGERY (Cattle)—Written Examination.—*Silver Medal*—John P. Small. *1st Class Certificates*—John Baird, J. Montgomery, D. Frew.

PARASITOLOGY.—*Silver Medal*—John P. Small. *1st Class Certificate*—J. Montgomery.

MATERIA MEDICA, &c.—*Silver Medal*—W. M. Ferguson. *1st Class Certificate*—W. G. Forbes. *2d Class Certificates*—Albert M'Dowell, Arch. Logan.

PATHOLOGY, &c.—*Silver Medal*—W. G. Forbes. *1st Class Certificate*—W. M. Ferguson. *2d Class Certificate*—Arch. Logan.

VETERINARY HYGIENE AND DIETETICS.—*Silver Medal*—Albert M'Dowell. *1st Class Certificates*—W. M. Ferguson, W. G. Forbes. *2d Class Certificate*—J. H. M'Laren.

ZOOLOGY.—*Silver Medal*—James Taylor. *1st Class Certificates*—Pat. Tubridy, Roy Bickerton. *2d Class Certificates*—Jas. Tait, Hector M'Intyre.

JUNIOR ANATOMY.—*Silver Medal*—Jas. Taylor. *1st Class Certificates*—J. W. Tait, Pat. Tubridy. *2d Class Certificates*—J. Spreull, K. Mackenzie.

SENIOR ANATOMY.—*Silver Medal*—Jas. F. Craig, M.A. *1st Class Certificates*—Jas. Wallace, N. MacAlister. *2d Class Certificate*—J. M'Farlane.

PHYSIOLOGY.—*Silver Medal*—Jas. F. Craig, M.A. *1st Class Certificate*—N. M'Alister. *2d Class Certificates*—Jas. Wallace, J. M'Farlane.

CHEMISTRY.—*Silver Medal*—Jas. Taylor. *1st Class Certificate*—J. W. Tait. *2d Class Certificate*—Roy Bickerton.

BOTANY.—*Silver Medal*—Jas. Taylor. *1st Class Certificates*—J. W. Tait, Thos. Craig, Roy Bickerton.

Best Professional Examination in Veterinary Medicine and Surgery (Cattle) before the Board of Examiners.—*Gold Medal* (by Principal M'Call)—John P. Small.

Best Professional Examination in Veterinary Medicine and Surgery (Horse) before the Board of Examiners.—*Gold Medal* (by Principal M'Call)—John Baird.

Best Professional Examination in Anatomy before the Board of Examiners.—*Gold Medal* (by the late Dr. Allen Thomson)—Jas. F. Craig, M.A.

STABLE MANAGEMENT.—*Silver Medal*—Jas. Wallace.

Notes.

TREATMENT OF EPISTAXIS.

Mr. J. F. Pease (*American Veterinary Review*), reports an interesting case of epistaxis treated by intravenous injection of gelatine. A small aged mule was brought to him bleeding severely from the right nostril. No light could be thrown upon the case with regard to the cause. General senile degeneration of the vessels was suspected. Cold water douches were first tried; then sub-sulphate of iron was added. This was followed by plugging, and this again by the repeated administration of ergot along with further douches. This line of treatment was ineffectual, so, following the recommendation of a practitioner of human medicine who happened to be present, Pease injected a 2 per cent. solution of gelatine in a $\frac{2}{8}$ per cent. solution of common salt into the jugular vein. When the injection was begun the mule was rapidly losing strength and the blood seemed thinner than ever; but before the injection was completed coagulation had begun, and in a short time hæmorrhage had ceased.

FORMALIN AS A MILK PRESERVATIVE.

A. G. Young (*Medical Record*) is strongly opposed to the use of formaldehyde as a preservative of milk, and sums up his views in the following conclusions:—

1. Used as a preservative it tends at least to impair the nutritive value of milk.

2. It tends to interfere with the digestive processes. In either case it is only a question of dosage, and the limit of safety is difficult to determine.

3. Though the inhalation of formaldehyde gas is much less dangerous than the breathing of the other gaseous agents much used as disinfectants, the results of tests upon animals, and of one case of accidental poisoning of a human being indicate that formaldehyde taken into the digestive system may produce dangerous and even fatal results.

4. It would be unwise and unsafe to encourage or to suffer the use of formaldehyde in the public milk supply, even under any possible restrictive regulations.

5. In every State, as is now the case in many, there should be a law prohibiting, with effective penalties, the use in milk of any chemical preservative whatsoever.

THE ANCESTOR OF THE DOG.

The question whether the dog has descended from the wolf or the jackal is one of considerable interest to biologists; and opinion is somewhere about equally divided on the question. Mr. Seton-Thompson in the *Century* reviews the facts, and comes to the conclusion that the dog may claim the jackal, and not the wolf, as his ancestor. While being convinced that the jackal is the stock parent, Mr Seton-Thompson, however, admits that a strain of wolf blood has certainly been infused in some countries. The best evidence in a case of this kind, says the writer, is to be found in reversion, and "observations on dogs that have reverted, or gone back to their ancestral form, point very uniformly to one conclusion.

"The general colour of a wolf is greyish, with a black or dark tail-tip, rarely with light-coloured spots, or 'bees' over its eyes, and with a height at the shoulder of about twenty-six inches.

'The general colour of a jackal is yellowish, with more or less white hair on the tip of its tail, and invariably with bees over its eyes; its height is about twenty inches at the shoulder.

"All the largest breeds of dogs show signs of over-development, such as faulty teeth, superfluous toes, frail constitutions, &c. All dogs that have any white about them have at least a few white hairs in the tip of the tail; and when allowed to mongrelise freely—that is, to revert—the dog always becomes a small yellowish animal, with brown bees over its eyes, a white tail tip, and a height at the shoulder of about twenty inches; that is, it resumes the jackal type.

"Another argument, which I have not seen in print, is this: although the wolf was abundant in Europe during the old stone age, the dog was unknown until it appeared on the scene with the Neoliths, a race that came from the home of the jackal.

"My observations on the habits are evidence for the jackal theory. Wolves rarely turn round before lying down; dogs and jackals usually do. Wolves rarely bark, while jackals, as is well known, do frequently bark after the manner of dogs."

ABORTION.

The bacteriologist (C. E. Marshall) of the Michigan State Agricultural College Experiment Station has issued, in the form of a special bulletin, a "Review of Professor Bang's Work with Contagious Abortion." In Bang's first series of experiments the results indicate that "the abortion bacilli do not always entail the expulsion of the fœtus, but that the result is sometimes merely the death of the fœtus." In the second series of experiments, pure cultures of the abortion organism were injected into the vaginæ of two pregnant cows which had been procured from stock among which abortion was unknown. Two months after the inoculation one of the cows aborted at the fifth month of gestation. This animal was slaughtered, and the bacilli of abortion were found in the uterus. The other cow was also slaughtered, and, although the fœtus was evidently alive at the time of slaughter the organism was also found in the uterus.

Infection by the bull is also considered. This source of spread may, however, be checked by washing the generative organs of the bull with a warm one-and-a-half per cent. solution of lysol.

Marshall concludes with the following important statement:—"To fight contagious abortion, it becomes necessary, therefore, to disinfect the

bull before and after service, to disinfect the uterus and vagina of the cow as well as the cow herself, to isolate the cow, and to disinfect the stable with its utensils. In disinfecting the uterus of the cow, it would be well for the stockman to secure a competent veterinarian to instruct him, inasmuch as the process will have to be repeated frequently, and the stockman will be able to do the work himself if he is once shown how."

MEDICAL PRELIMINARY EXAMINATION.

At a meeting of the General Medical Council held on May 30th, Sir John Batty Tuke presented a report by the Education Committee on the question of raising the standard of Preliminary Examinations in general education. The Committee had obtained from Mr. Sharpe, Dr. M'Grath, and Professor M'Cormick a joint report, setting out in full their reasons for the conclusion they had arrived at with regard to the adoption of the senior and higher grade standard of preliminary education, together with a separate report from each of these experts on special points connected with the examination of his division of the United Kingdom. It would be seen from these reports that ample grounds were given for the conclusion that it was impracticable in the existing conditions to require of all intending medical and dental students the standard of general attainments represented by the so-called senior and higher grade examinations. A substantial advance on the present requirements could, however, be made by insisting on improvements in the character and stringency of those junior examinations, which could be directly influenced by the Council, and in the case of the others by requiring that candidates offering the corresponding certificates had obtained a higher standard than that of a simple pass. Detailed suggestions were offered, which, if adopted, would have the effect of bringing about the desired advance, and the Committee, having considered these suggestions, commended them to the favourable consideration of the Council. During the discussion, a question which had an important bearing on the matter in hand was raised, and it appeared to demand a definite answer on the part of the Council. The question was, whether the time had not come for fixing a limit of age below which an applicant should not be allowed to be registered as a medical or dental student. The Committee were of opinion that such a limit should be fixed, and proposed that for the present an applicant for registration should be required to have attained the age of sixteen. At a future time, when a sufficient advance had been made in the standard of preliminary education, it might be advisable to raise the limit of age to seventeen. This would have the effect of inducing those who intend to enter on the study of medicine to spend a longer time over ordinary school subjects, and so to fit themselves for the more stringent leaving and other preliminary examinations it was proposed to require. The Committee accordingly recommended—1. That from and after January 1, 1902, no person shall be registered as a medical or dental student who has not attained the age of sixteen years, and that for the purpose of ensuring the observance of this regulation every applicant for registration in the students' registers shall be required to produce satisfactory evidence that this age has been attained. 2. That the Education Committee will be authorised to take all needful steps to give effect to the suggestions for the improvement of preliminary examinations contained in the appended joint report of the expert advisers, and to report from time to time to the Council thereupon. In his separate report Dr

M'Grath says:—"We found that a preliminary examination which would demand Scottish higher grade leaving certificates in the four subjects required by the General Medical Council would be of a standard much higher than that of preliminary or matriculation examinations in any Faculty of any University with which we are acquainted. We see no necessity for enforcing, and no possibility of maintaining, such a standard, and we believe, if this is the meaning given to the terms by the General Medical Council in their proposal to increase the requirements of their preliminary examinations from junior to senior grade, they have been imperfectly informed of the standard implied." Professor M'Cormick in his separate report says:—"Until the General Medical Council succeed in bringing the minimum standard of their recognised examinations up to at least the standard suggested in our joint report, it would be premature to discuss the advisability of raising the minimum qualifications in the Scottish examinations. These examinations are at present of a higher standard than that which we have suggested in our joint report as a starting-point for the reform which the General Medical Council desiderates." Dr. M'Vail thought that the time would come very shortly when the Council should demand a preliminary examination of a much higher standard.

After some discussion, the two recommendations of the Committee were adopted, and a vote of thanks was tendered to the three experts for their assistance.

BAD EFFECTS OF INTRA-MAMMARY INJECTION OF IODIDE OF POTASSIUM.

Many practitioners have called attention to the fact that mammitis sometimes develops after the injection of iodide of potassium in the treatment of parturient apoplexy. M. Paul Coremans has been making inquiries as to the cause of this. Certain experiments led him to suspect that the real cause was impurity of the solution employed. If a solution of iodide of potassium be left exposed to the air for some time it becomes yellow from the formation of oxygenation products. M. Coremans made two experiments by which to determine his suspicions. A rabbit, in which the mammary glands were not functioning, was injected with a yellow solution in one gland, and with a normal solution in another. The yellow solution produced a mammitis which lasted for some time. The other experiment was upon a cow giving 3 or 4 litres of milk per day. The result was much the same as in the rabbit. There can be no doubt that, had the injections been continued as long as they are in the therapeutic use of the injections, a mammitis would have been produced identical with that which has been noticed by practitioners employing this means of treatment.

M. Coremans remarks, therefore, that the iodide should be absolutely free from oxygenation products. In order to attain this, it is necessary to follow the mode of preparation indicated by Melsens. The iodide of commerce is calcined to a point of fusion in an iron capsule, in the presence of pure iron filings; the salt is dissolved and kept in the presence of iron filings. Under these conditions the solution does not become yellow, nor does it alter so as to become injurious when used as an intramammary injection.

MINISTER OF AGRICULTURE ON SWINE FEVER AND RABIES.

When the House of Commons was in Committee of Supply on June 22d Mr. Long made an interesting statement concerning swine fever and

hydrophobia. He said the figures with regard to swine fever this year were on the whole satisfactory, generally speaking, over the whole country. There was a decided improvement with regard to the position of this most insidious disease. He thought they had every reason to believe that their efforts were supported by the owners of this class of stock, and there was no reason why this disease should not be as satisfactorily dealt with as other diseases had been. There was no doubt whatever as to the character of this disease. It was a highly infectious disease, and, unfortunately, it could be conveyed from place to place. There was no country in the world which stood now in such a position with regard to the diseases of animals as the United Kingdom. Comparatively speaking, a short time ago, this country was as great a sufferer from the diseases of animals as any country in the world. The present state of things had been brought about by the vigorous action of officials of the Department, and it was to those officials, whether they were seniors or juniors, that thanks were due for the work that had been done. He owed a great debt of gratitude to the medical and scientific men of this country for the uniform support they had given him from the commencement of his labours in connection with rabies, and many gentlemen, on both sides, for the support they had given him. He supposed the regulation had brought him some unpopularity, but after all that was part of the business he was paid for. He was very glad in regard to rabies that their labours had been so successful. He believed the disease had been practically exterminated, and that with obedience to the regulations against the importation of dogs there was no reason why they should not hope to protect the country against any fresh invasion from this most terrible disease. He did not think they had any reason to believe that the outbreak of foot and mouth disease in Norfolk was a recrudescence of disease which previously existed. He did not think there was any justification for the view as to spontaneity. If they could get at the facts they would find that the disease had been introduced through some of their ports by some means of contagion, which was brought to the premises where the disease occurred. All they could do was to continue the policy they had followed of isolating a certain district, and so far as possible keeping out the means of infection. He sympathised with the view that the farmers and others suffered heavily in consequence of these outbreaks and the regulations, but after all it was a question of the loss and convenience of a section of the community against the danger and convenience of the vast majority of the community. He hoped that with the support of the community they would find that the remedy would be the absence of regulations in consequence of the absence of the disease.

RESEARCHES ON ANTITOXINS.

Professor Wassermann, at a Congress of Internal Medicine recently held in Berlin, said that except in the case of diphtheria the results of the antitoxin treatment had not been very favourable. Anti-cholera, anti-typhoid, anti-pneumococcic, and anti-streptococcic sera had been tried without success. Experiments made by Professor Ehrlich have shown that the action of bactericide sera depended upon two substances—the immunising or "intermediate" substance and the so-called "complement." Both substances together had a specific action against the virus. Hitherto the intermediate substance which was present in the serum of immunised animals had been used exclusively in the serum treatment of enteric fever,

and the "complement," of which a certain quantity was present in the normal blood-serum, had been neglected. A co-operation of both the intermediate and the complement substances being essential for an antitoxic action, Professor Wassermann accordingly, apart from the serum of immunised animals, injected a certain quantity of fresh normal blood-serum. It was of great importance to find the adequate complement to a given immunising serum. He made experiments on guinea-pigs infected by a culture of enteric fever bacilli. Three of the guinea-pigs received injections of serum taken from an immunised dog, the result being that the three animals died. In another series of guinea-pigs together with the above serum a quantity of serum taken from normal, not immunised, cattle was injected, and by this method the infection was effectually overcome. Professor Wassermann concluded that by the administration of fresh serum of cattle the action of the immunising substance was practically very much augmented. He hoped now to be able to obtain good results in the human subject.

RESEARCHES ON VACCINE LYMPH AND FOOT AND MOUTH DISEASE.

Dr. Siegel has written to the *Deutsche Medicinische Wochenschrift*, mentioning that he has discovered several classes of micro-organisms in the vaccine vesicles of vaccinated calves, and also in the vesicles of foot and mouth disease in cattle. The first variety of these organisms is described by him as consisting of spherical or oval bodies resembling cysts, of a brownish colour, and from 10 to 18μ. in diameter. The capsule has two layers, an external one with radiating stripes and an internal smooth one. The capsule is sometimes torn. The organisms of the second group are smaller, being from 6 to 8μ. in diameter; they are lighter in colour and are covered with a visible membrane. Sometimes they are granular, and it is very likely that they are contained in the capsules of the first-mentioned group. The third group consists of organisms belonging to the second group broken up into a great number of very small round corpuscles which are dispersed somewhat uniformly throughout the specimen. The diameter of the smallest organisms is hardly more than $\frac{1}{4}\mu$., their colour being yellow. There is no difference between the organism detected in the vaccine vesicles and in foot and mouth disease. The above-mentioned large cyst-like bodies are rather rare, whilst the small corpuscles are very numerous. It has not been possible to stain them, and they are very resistant against acids and alkalies.

ARMY VETERINARY DEPARTMENT.

Among the benefits which we may expect to accrue from the present war in South Africa, none will touch the veterinary profession more nearly than the changes that appear inevitable in the Army Veterinary Department.

Many pens in many places have, within the past few months, pointed out our weaknesses in times of war. One great weakness appears to lie in the want of proper means of attending to sick and wounded horses. Among recent papers on this subject, that by Lawrence W. Pike, on "The Cruel Case of the Wounded War-Horse," which appears in the June number of the *Nineteenth Century*, is not the least important. Many and startling are the facts contained in this paper. According to Mr. Pike, the Army

Veterinary service is immature. The sanctioned number of the whole Army Veterinary Department for England, India, and the Colonies is only 142, and out of this number 20 are employed by the Indian Government on purely civil duties. With 150,000 Government animals in South Africa (which at a very moderate estimate may be taken to represent some £4,000,000 sterling), there are only 47 army veterinary surgeons, and these cannot give an order or make a recommendation, having no military status and no staff of men under them. The head of the Army Veterinary Department himself has no control over the veterinary surgeons; every order to them, even of the most pressing nature, has to be given through the Quartermaster-General. "The want of military status, with a staff of assistants, is one of the chief causes why properly qualified veterinary surgeons cannot now be got for the army." The writer points out that so unpopular is this service that in July last six commissions were vacant (these have now been increased to twelve). Since the 9th of November 1898 only one candidate has been gazetted to the army. That there were plenty of qualified men is shown by the fact that at the same time the New Zealand Government offered civil appointments to six veterinary surgeons, on exactly the same terms as the Army Veterinary Department, and there were exactly seventy candidates. "The fact is, the so-called Army Veterinary Department is in an intermediate stage—between the old regimental system, when the veterinary surgeon was on the strength of the regiment, wearing regimental uniform; and the departmental system, when he belongs to a corps of his own, and has subordinates under his command to perform duties for which he makes the necessary arrangements, and for the due performance of which he is held responsible." "The present intermediate stage should be abolished, and supplemented by a self-contained Army Veterinary Department." The veterinary hospital, as in the Indian Army, should be in charge of veterinary officers, who alone should give orders on the management, feeding, and exercise of sick animals. These officers should have attendants, dressers, and farriers under their command; they should pay, and reward or punish, these subordinates, just as the medical officers now do the privates of the Medical Corps.

Mr. Pike concludes by making the following recommendations:—

(1.) The Army Veterinary Department should be reorganised and put on the same footing as all the other departments in the army, such as the medical, school, pay, and ordnance departments.

(2.) The extension of the protection of the terms of the Geneva Convention should be obtained for those who care for wounded animals.

(3.) This protection having been obtained by international agreement, or temporarily for a campaign by agreement between Commanders-in-Chief of opposing forces, all badly wounded animals should be destroyed by the veterinary staff without avoidable delay.

Extracts.

SKIN-LIKE MUCOUS MEMBRANE AND CARCINOMA IN THE RECTUM OF A HORSE.

Herr Cordes, of Coswig, was so kind as to place at the disposal of the Pathologico-Anatomical Institute of the Hanover College the rectum of a five-year-old horse. This animal had been treated by Cordes for intestinal obstruction. As, on examination per rectum, tumours in the rectum were found to be the cause of the trouble, and as there was no chance of cure the animal was killed. On removal, the rectum was found impacted and distended with fæces. For a distance of 26 cm. from the anus the mucous membrane had the appearance of that in the œsophagus and the cuticular part of the stomach, only differing in that it was very soft, as thin as paper, and thrown into fine folds. Microscopically it was found to be covered by stratified squamous epithelium. This skin-like mucosa was continuous with the outer skin, pigmentation showing itself at the junction. Here and there in this abnormal mucosa were patches of normal mucous membrane. These were sharply defined from the rest. Three of the patches were as big as a shilling; another was as large as the surface of the hand. In addition to this abnormal mucosa, there were nodular rough tumours, forming a belt-like swelling of the rectal wall. This swelling began 15 cm. from the anus, and continued 20 cm. forwards. There were numerous tumours of the size of a hazel nut, and five as large as a hen's egg, in addition to flattened nodules, which reduced the lumen of the rectum to a mere cleft. This part of the rectum was 9 cm. thick, and was correspondingly rigid. The free surface of the tumours was for the most part bare of mucous membrane, so that an irregular ulcer, as big as the surface of the hand, had formed. The ulceration had extended for some distance on to the normal mucosa; and fissures, often several centimetres in depth, were formed in the rectal wall between the tumours. On section of the thickened wall of the rectum, tumours of various sizes, hard in consistence and grey in colour, were found in the periproctal and subserous tissue. The larger tumours had broken down towards their centre, and so cavities had been produced whose walls were covered by shreds of necrosed tissue. The muscular tissue of the rectum was thickened four-fold in front of the neoplasm. In the region of the carcinoma the muscle had undergone varying changes; some cicatricial tissue had formed between the fibres, and atrophy had resulted. Histologically it was found that there was no difference between the normal mucosa and the patches of apparently normal mucous membrane. Crypts were well developed in these patches. The muscularis mucosæ was also normal, except that about the ulcers there were collections of leucocytes between the muscle and the membrana propria of the crypts. The submucosa immediately beneath the glands was still loose, but lower down it had become sclerosed, and sent bands into the muscular tissue of the rectal wall, which were in connection with masses of fibrous tissue in the periproctal connective. Scattered throughout this coarse tissue were large and small lobulated tumours. Microscopic examination of these showed them to be carcinomata. The epithelium was in the form of almost spherical cell nests. In the centre of the cell nests the epithelium was horny; towards the periphery the cells became more cubical. In many

places in the region of the neoplasm cell nests were found in process of development; they had commenced from small thick-walled blood vessels. In the lumen of the vessels were small groups of epithelial cells alongside normal red blood corpuscles. In other places the red blood corpuscles had fused into a more homogeneous mass with vacuoles, and were surrounded by cancer cells. Thin sections gave these appearances in very varying character, depending upon age. Further, the cells in the outer zone of the cancer mass were found to contain material derived from the blood. In part this material still contained blood pigment. A 5 per cent. HCl solution disintegrated these granules, which were found to consist principally of globulin.

This observation explains the origin of certain eosinophile granules. In many cases the masses of globulin exceeded the nucleus of the cell in size. Other epithelial cells were greatly enlarged by the presence of these granules and vacuoles, or their nuclei were enlarged and surrounded by a double-contoured sheath of globulin.

It is not my intention in describing this peculiar case of carcinoma to discuss questions of etiology, but I think that the conclusion that the abnormal mucosa was the cause of the tumour is justified.

(Dr. Olt, *Deutsche Thierärztliche Wochensch.*)

PARAVAGINAL ABSCESSES IN THE MARE.

In the mare, after foaling, one often lights upon abscesses in the connective tissue between the vagina and rectum. In most cases only one abscess is present, lying to the side of the vagina and rectum, and bounded in front by the peritoneum. The abscess may assume a considerable size, and contain from $\frac{1}{4}$ to 2 or even more litres of pus.

Causes.—In some cases the wall of the vagina, and in most cases the vulva, was injured, whence infection arose. The vagina, and especially the vestibulum vaginæ, invariably contains streptococci, whose virulence, however, is generally not great. It appears probable that infection may also take place in other ways, which, however, are as yet obscure. Infection may occur during coitus. The mare is generally covered nine days after parturition, but it is not always possible to determine whether infection has occurred post-mortem or during the act of covering. It is all the more difficult to be certain on this point, because the trouble is not fully developed until two or three weeks after foaling.

As to how far strangles infection may be in operation, I cannot judge, although I have more than once observed that the abscess occurred in a mare which had been covered by a stallion suffering or recovering from a mild attack of strangles.

Symptoms.—Ten to fourteen days after foaling the general condition of the mare is noticed as being somewhat lowered. The appetite is still good, but the mare is lazy, and when out at grass often remains standing for a long time in the same place. The secretion of milk is slightly diminished. There is pain on defæcation and micturition, the latter act being especially painful. The temperature is somewhat elevated (39-39.5° c.) The gait is not free. Usually there is as yet no external swelling. Rectal examination usually reveals a localised swelling, generally on the right (I have only once found it on the left), and from 10 to 15

cm. from the anus. The calibre of the rectum is here narrowed, and fluctuation can be made out.

In many cases a diffuse smelling can be detected close to the anus and vulva, this being continued over the tuberosity of the ischium. The labium of that side is swollen, and the os uteri is often awry. Naturally a paravaginal abscess is suspected; the diagnosis can be cleared up by vaginal and rectal exploration. Internal examination should never be delayed, because with suitable treatment the trouble may be at once relieved.

Prognosis.—As a rule prognosis is favourable, provided suitable treatment is adopted. The complication which may occur is perforation into the peritoneum, producing fatal peritonitis. This, however, is not common, yet the possibility must be borne in mind. I have never seen spontaneous rupture into the vagina or vulva, but often about the anus, where the thin skin offers little resistance.

Treatment.—Early incision of the abscess should be practised. Fluctuation should not be waited for, as it is often delayed and complications may arise in the interval. After antiseptic precautions have been taken, the hand is to be introduced into the vagina, and the position of the abscess accurately determined. A trochar is introduced and the pus evacuated. The depth to which the trochar must penetrate varies from 4 to 10 cm. The opening should be enlarged in a vertical direction so that the pus may obtain a free exit. The cavity is washed out with a 1-1000 sublimate solution and then stuffed with iodoform gauze. The mare should be allowed to go to grass, as the muscular contractions produced by grazing favour the flow of the pus. Cure generally occurs in eight to ten days.

(H. Bruin, *Berliner Thierärztliche Wochenschrift.*)

LYMPHOSARCOMATOSIS IN A COW.

Vet.-Surgeon Paust found on examining post-mortem a five-year-old cow as follows:—The animal was in good condition, and was halfway through her pregnancy; she showed on the labia a growth almost as large as a child's head; the labia had increased in size through this abnormal state of affairs, and by reason of the weight hung straight down. The cow must have carried this gradually increasing swelling for years. From the labia to the udder there ran a line of nodules as large as cherries in a double row; the lymphatic glands of the udder felt quite hard. In this tumour were found dozens of great and little nodules filled with a creamy, light-yellow pus, as also was the case with the line of external nodules and in the lymphatic glands of the udder. Further, the glands of the pubic region, the deep inguinal glands, and the iliac glands, and likewise the bronchial, mediastinal, and the lymphatic glands of the liver, were all affected in the same way, but nowhere else could lesions be found. The above-mentioned nodules in the labial tumour were embedded in strong white sinewy cords of connective tissue, which when cut showed a surface like bacon. Some nodules ulcerated through to the surface and emptied their contents, when moderate pressure was applied to the spot, on to the surface, where, in round patches the size of a pea, the fine hair had disappeared. Blood-vessels were present, pretty numerous, dilated, and with walls clearly distinguishable from the tumour tissue (teleangiectatic sarcoma). Microscopic examination confirmed the diagnosis.

(*Berliner Thierärzt. Woch.*)

DYSTOKIA CAUSED BY INDURATION AND DEGENERATION OF THE CERVIX UTERI.

On 13th March I was called out in haste to help in the delivery of a cow which had been in travail for fifteen hours. On arrival I found the animal lying prostrate, a prey to violent contractions. Introducing my arm in the vagina, I found, about a handbreadth from the vulvar opening, the cervix so contracted that I could scarcely get my forefinger into it. At first I thought it was a case of spasm of the cervix, but I soon discovered that I had before me a case of induration. In fact the contractions of the cervix were absolutely wanting, and this organ was hard and knotty; the state of the animal also, an old, ill-nourished creature, favoured the latter diagnosis. I told the owner of the gravity of the case, and obtained from her full permission to do whatever was necessary. I then introduced into the vagina, concealed in my hand, which I kept folded cone-shaped, a bistoury, the blade of which I thrust into the orifice of the cervix, and made four longitudinal incisions, one above, one below, and one on each side, over its whole length. There was almost no hæmorrhage. When the instrument was withdrawn, there appeared presently between the labia of the vulva the fœtal membranes, which I pierced, and then introduced my arm first into the vagina, in order to discover if the cervix was sufficiently dilated, and as I brought back a few clots of blood, I ascertained thereby that the cervix, having become degenerated, easily broke down under the fingers at the point of the incisions. With my fingers I widened each of these, and when the passage appeared wide enough to permit of the exit of the fœtus, I made preparations for its extraction.

The case was an anterior presentation and in dorso-sacral position, with the limbs flexed under the body and the head very much bent back. I easily got out the two limbs, which I at once secured with two cords; on the other hand I found great difficulty in bringing the head into the normal position, but I succeeded at last. Then, holding the head of the fœtus in the proper position with my hand, I told my two assistants to pull gently the two cords fixed to the limbs. All was going well except that the vaginal mucosa, under the strain of pulling, instead of remaining distended (the animal having prolapsus of the vagina), fell back upon the labia of the vulva, forming thus a thick ring which prevented the exit of the head of the fœtus. All attempts to get the head out remaining fruitless, I introduced the bistoury between the head of the fœtus and the vaginal mucosa, and made an incision in the latter lengthwise and upwards, which produced no hæmorrhage; then with a final effort I brought out the fœtus, which was in excellent condition. The mother was quite exhausted, but soon became relieved, and began to lick the calf, which we set before her. I wished next to remove the placenta, but as it was firmly adherent I left it in position, fearing to produce laceration of the uterine mucosa. I had the parts thoroughly irrigated with tepid sterilised water, and I left after prescribing 3 per cent. carbolic irrigations. On the 15th, two days later, I saw the animal again, and found her in excellent condition. Her temperature was almost normal, the placenta had been expelled, vulva and vagina, though slightly congested, did not show any abnormal discharge. The animal was eating greedily and had always ruminated; the milk secretion was not inferior to that of former births. The owner frankly confessed to me later on that the animal had all along

been quite well, that no antiseptic irrigation had been performed, and that only the tepid sterilised water had been applied. I left after telling her of the importance of my prescription, which she had neglected. The animal recovered completely.

(Dr. CESARE BRUSCHI in the *Clinica Veterinaria*, No. 17, April 28, 1900.)

TWO CASES OF OBSTRUCTION OF THE ŒSOPHAGUS IN CATTLE; EXTRACTION OF THE FOREIGN BODY BY MEANS OF AN IMPROVISED INSTRUMENT.

IN February 1893 I was called in at about eight in the evening to attend to a heifer which had a potato stuck in its throat. I left my house furnished with an ordinary probang, a pretty rudimentary twitch, and instruments necessary for performing œsophagotomy or puncture of the rumen if necessary. On my arrival the animal was in a relatively satisfactory state, the rumen was not too much swollen, and the animal's general condition showed little anxiety. This was fortunate, as we had thus time to operate without being obliged to resort to extreme measures. The swelling produced by the foreign body was hardly visible, for the latter was stuck in the entrance of the œsophagus, that is to say, at the lower end of the pharynx. An attempt at taxis gave no result. At this moment, one of the farm hands told me that he had succeeded in feeling the potato by inserting his hand into the animal's mouth. At the same time I learnt that an abortive attempt had been made to push the potato whole into the stomach by means of a whip handle. I at once thought it my duty to investigate the foreign body by putting my hand down the animal's throat. Having a pretty small hand, I expected to be quite successful. I placed my assistants in the following manner: the first was ordered to keep the gag in its place, a second held the animal by the nostrils with one hand and by the opposite horn with the other, a third had his hands on each of the jugular grooves, so as thus to push forward as much as possible the larynx and pharynx and prevent them from recoiling on pressure of my hand. On a first attempt I easily succeeded in feeling the potato with my fingers. I could feel the outline of its surface in contact with the mucous membrane, but the very position of my hand, intercepting the passage of air, immediately began to cause suffocation, the effect of which was to cause the animal to make movements so wild that we were obliged to cease from our work. Several attempts showed me the impossibility of extracting the potato by the hand alone. During a rest, which was very necessary for us all, as I reflected on the end to be attained, I was suddenly struck with a happy idea. I asked the farmer for a bit of iron wire, giving him for approximate diameter the circle of iron protecting the glass of the stable lamp. He soon returned with the object desired, which I had stretched out to a length of 30 to 35 centimetres, and to which I afterwards gave the form of a ring, aiming at getting at a curvature and diameter to suit the supposed volume of the potato. I held the extremities of the wire in the palm of my hand, leaving protruding only a quite harmless handle. One branch of the ring passed between thumb and forefinger, the other between the ring and middle fingers; as my fist was closed, the extremities of the wire were completely hidden. The assistants, warned by previous attempts, made ready to put forth all their energy to stop the animal from struggling

during the moment when respiration would be suspended. Preceding explorations had not been useless as far as I was concerned. I soon reached the potato with the handle of the iron wire; this I directed between the upper part of the pharynx and the foreign body. I continued to push until my fist had come into contact with the object to be extracted, then I pulled quickly towards myself, for despite the rapidity with which I had operated the animal was beginning to defend itself with a vigour incredible in a young animal. After I had withdrawn my hand, we had the satisfaction of seeing that the foreign body was on the ground. I had my arm a little scraped by the twitch, but it was nothing.

Second case.—In September 1897 I was called in to extract a potato stuck in the œsophagus of a cow. No proceedings had been taken before my arrival. Insignificant meteorism and satisfactory expression. The swelling caused by the foreign body was situated at the limit of the higher and middle third of the neck. By means of taxis I succeeded, with the owner's aid, in making the potato reach the level of the larynx. After this, as our efforts remained without result, I asked for an iron wire about 1 m. 75 long. The binder of a bale of peats was exactly what I wanted: the diameter was hardly 2 millimetres. I bent the wire into two equal parts, and gave the handle a curvature in proportion to the supposed volume of the potato. I then disposed the two branches of the curvature in such a way as to leave a circle enclosed by a twist, which I prolonged to the extremities of the iron wire. The ring with its twisted prolongations constituted my improvised probe, which had a length sufficient to easily reach the object to be extracted; this it was easy for me to verify by measuring the distance between the swelling and the muzzle. These preparations ended, one assistant held the twitch, while another pushed the potato forward as in the former case. The animal being tied to its manger, a third held it by the nostrils. The first attempt was fruitless; we were four of us at the head of the animal, and were in one another's road. I gave up the use of the twitch and of the assistant ordered to keep hold of it. Whilst the assistant holding the cow by the nostrils kept the head stretched out, I seized with my left hand the tongue, whose free portion I pulled outside the mouth, whilst a portion of the fixed part was placed between the first molars of the right side. The assistant whose duty it was to push up the foreign body had resumed his post. With my right hand I inserted the probe; as soon as it had got beyond the soft palate, the animal stopped chewing, a movement which caused some difficulty in the introduction of the instrument. The oval of the probe striking against the foreign body, I felt a resistance and even a slight flexion of the twist; when I thought I had got beyond the foreign body, I drew back my hand. The respiration of the animal not being impeded, the operation was easy, and was able to be performed without precipitation. After two or three attempts I drew back the probe, imagining that I had not succeeded, when it was pointed out to me that the cow was chewing something. It was the potato. To convince myself, I had some water given the animal; the liquid was swallowed without the slightest difficulty.

The advantages of this method of procedure suggest to the author the possibility of a similar means of extraction of foreign bodies in human subjects.

(*Annales de Médecine Vétérinaire.*)

TUBERCULOSIS OF THE HORSE.

GELDING of native breed, twelve years old, formerly used in the Artillery batteries at Leyden. For some time the general condition of the animal had left something to be desired. On inspection in April 1899 the leanness and depression drew our attention so keenly that we had the animal removed to the infirmary. We were told that the animal's appetite was capricious and mastication slow, though it ate all its food allowance. It was known as a weak animal, which, however, performed its work uninterruptedly. On general examination we discovered slight elevation of rectal temperature, pulse a little accelerated, respiration more frequent than ordinary. Heaving of the flank took place without jerk, conjunctiva livid. The lymphatic glands were not swollen; coat glossy, and skin still easily detachable from the ribs. The look and attitude of the horse, however, gave signs of suffering. Percussion of the horse showed resonance everywhere; auscultation revealed nothing but an exaggerated breath-sound. The heart showed no very clearly marked disorders; however, the first sound seemed to us duller, the second louder than the normal. There was no cough or secretion. Fæces were firm and dark. Appetite not diminished; on the contrary, besides the usual ration of oats and hay, the patient ate grass, mash, and bread. We soon noticed that it was affected with polyuria, coinciding with intense polydipsia. Repeated examination of the urine, the specific gravity of which was low (1002-12) showed the presence of albumen, but of no sugar. Microscopic examination gave no information as to possible nephritis. Rectal exploration gave only negative results.

The horse's state grew gradually worse. Though preserving a fair appetite, it grew so thin as to look more like a skeleton than a living horse. The muscles atrophied more and more, and the skin adhered to the underlying parts. The animal's look was dull, and if it was exercised it stumbled and soon got out of breath; on turning it threatened to fall. Hyperthermia varied between 0, 5, and 1°, 5, C.; sometimes the rectal temperature was almost normal. Pulse and respiration were accelerated, sometimes more, sometimes less. Cough rare, but from time to time a little mucous discharge was observed. Cough and discharge were, however, often absent for several days. Repeated examination of the thorax showed nothing abnormal; percussion even produced a very clear sound by reason of the emaciation of the thoracic walls. To sum up, the cardinal symptoms consisted in progressive emaciation, weakness, want of breath, and depression; then in persistent hyperthermia, polyuria, and albuminuria. Some weeks before death the limbs, which had hitherto been quite clean, became œdematous. Towards the end food was also several times refused, and the horse, which had remained constantly standing, often lay down. On the evening of 30th June it suddenly collapsed and died, that is, three months after its retiral from service. Post-mortem revealed the following lesions:— In the spleen tubercles, which might reach the volume of a nut. On the mesentery were developed some granulations, and on the abdominal surface of the diaphragm was a pearly tumour of the size of a pigeon's egg. The mesenteric glands exhibited some small lesions. The intestines and liver were normal; so also were the kidneys, apart from a little pyelitis. Lungs were very large and relatively heavy; notwithstanding they floated on water. They were stuffed with tuberculous foci of very variable dimensions, enclosing a soft cheesy matter. The bronchial glands showed some small nodules.

Several of the other lymphatic glands had undergone alterations or showed tubercles. The heart was especially hypertrophied. In the mucous membrane of the bronchi the microscope showed the presence of the tubercle bacillus; the product of the scraping of the pulmonary lesions was in this respect very rich. The nodules of the spleen were brayed with sterilised water, and a small quantity inoculated into the peritoneum of a guinea-pig. The latter, after great emaciation, died 16th September (about 2½ months), and showed extended tuberculosis of the thoracic and abdominal organs.

According to writers, it is generally the abdominal form which tuberculosis of the horse assumes; in the present case it is evident that infection started with the lungs; the most advanced lesions were indeed those of these organs.

It should be noted that polyuria is a most valuable symptom. Nocard has noticed it in eleven cases of abdominal tuberculosis.

(M. KNIPSCHER in the *Recueil de Médecine Vétérinaire.*)

Reviews.

REPORT OF THE ARMY VETERINARY DEPARTMENT FOR THE YEAR ENDING MARCH 31, 1899.

This Annual Report is always interesting, but this year, owing to the severe manner in which the Army Veterinary Department is being criticised by all and sundry, the interest is greater than usual. The Report is, on the whole, very satisfactory, and we congratulate Veterinary-Colonel Duck on the success which has attended his efforts. We learn that, on March 31st, 1899, there were in the United Kingdom 14,305 troop horses, 115 mules, and 1915 chargers, as compared with 13,828 troop horses, 135 mules, and 1845 chargers in the previous year. It is interesting to notice that the mortality among the horses, &c. was highest during the months of September, August, June, and December. The number of deaths were 2·70 per cent. of the average strength, being 0·59 per cent. less than during the previous year.

Unfortunately glanders was introduced into Egypt by a remount horse which had been purchased in Syria. As a result, ten horses and seven mules had to be destroyed. No case has occurred since November 23d, and now arrangements have been made whereby all newly purchased animals are subjected to the mallein test before being admitted to the Government stables.

The section of the Report dealing with South Africa is briefly interesting, because of an investigation made by Veterinary-Lieutenant-Colonel J. Mathews on the subject of horse sickness. As a result of this investigation, detailed instructions have been issued to prevent the spread of the disease. Amongst the Wynberg Mounted Infantry an outbreak of osteoporosis occurred, in which 49 out of 359 cobs were more or less seriously affected.

The Vaccine Institute has, as usual, been doing good service during the year dealt with in the current report. Eleven calves were used in the production of lymph, each calf yielding, on an average, sufficient for 6942

persons. Sufficient lymph for 92,892 vaccinations was issued during the year by the Institute. This was supplied to the home and foreign stations, and also to the Royal Navy.

Although the Report is a mass of figures, it is a very important document as showing us in what state is that section of the army which has to look after the well-being of the horses and mules. However much of interest may attach itself to the present report, there can be no doubt that it will be far exceeded by that which will be extended towards the reports for the years ending March 31st, 1900, and March 31st, 1901.

Vivisection.

We cannot doubt that faddists of various kinds serve a good purpose. There seems to be no reasonable grounds for denying that they, in a measure at least, check abuses. They moreover act as a good stimulus to thought; for by their tirades, often almost hysterical, they give us pause and force us to ask if there be no truth in what they say. And this they do chiefly by the extravagance of their language; for a mild statement may be passed over unheeded, but an alarmist's note is usually at least loud enough to be heard above the lesser noises of the world. Antivivisectors, therefore, should be looked upon as persons who, at least, make so much noise that we are forced to hear them; and vivisectors are, as a consequence, forced to pause, for a time at least, in what their opponents are pleased to term their work of torture. No milder term than that of *torture* is ever used, so far as we are aware; and physiologists are never pictured by antivisectionists as other than men whose delight it is to cause pain to the lower animals. No higher aim is ever allowed as being the possible force by which investigators are driven to pursue their researches. The *Fortnightly Review* for March contains an article by the Honourable Stephen Coleridge, Honorary Secretary and Treasurer of the National Antivivisection Society, on the administration of the Cruelty to Animals Act of 1876. From this paper we learn that the Act is grossly maladministered. The general public have long been persuaded, says the writer, that animals are protected from torture by this law. A lamentable illusion! "This impression probably arises from the fact that the Act of 1876 would extend a legal protection from torture to vivisected animals if the Home Secretary did not voluntarily suspend its operation. It is also due in large measure to the solemn assurances made in Parliament, during the debates on the Bill, by the vivisectors' spokesman, that anæsthetics always had been, and always would be in future, universally employed by them." These assurances have, apparently, been proved by subsequent events to be perfectly false; "for ever since the Act was passed the power of suspending its operation, as regards anæsthetics, has been consistently and freely exercised in favour of any vivisector who procures a testimonial from some of his brother vivisectors, and we have accordingly arrived at the strange result that an Act passed avowedly to protect animals from torture has been so administered as to have become, in fact, an instrument to render the torture of animals legal and unpunishable." Mr. Coleridge then goes on to mention cases in illustration of this total perversion of the Act. He finds on inquiry "that the Home Secretary performs the duties imposed upon him in secret, and when pressed in the House of Commons to divulge his methods makes statements that flatly contradict each other;"

from which we are gather that the Home Secretary is no better than he ought to be, and certainly should be supplanted by a more upright and God-fearing man; indeed the nation is in danger if a man in high office stoops to "make statements that flatly contradict each other" merely in order to do service to miserable wretches whose sole pleasure in life is the torture of dumb creatures. It will be known to any one who has worked at vivisection that visits are paid unexpectedly by authorised inspectors, whose duty it is to see that the Act is not being violated. Mr. Coleridge falls foul of these inspectors even. They are evidently as bad as the Home Secretary. We are told that "very few laboratories receive a visit more than three times a year, some receive only one; and if the inspector were a convinced antivivisector, it is doubtful whether he would be able to catch even Dr. Klein (why Dr. Klein in particular?) breaking the law, because a vivisector can procure certificates under which any amount of torture becomes legal; but Dr. Poore, who was inspector for many years, signalised his departure from the post a few months ago by immediately making a violent public attack upon those who desire to see greater legal protection extended to vivisected animals, from which we may estimate the very arduous efforts it must have been necessary for him to exert to perform his duties with impartiality."

It is abundantly evident that, according to the Honourable Stephen Coleridge, all concerned in carrying out the Act, as well as those working under it, are of the most questionable character morally. They are apparently capable of any baseness in order that the *torture* of animals may go on. We do not feel that it is necessary to defend physiologists and others; their work speaks for itself; and, though Mr. Coleridge says that the benefits arising from vivisection are a matter for legitimate dispute, we may safely refer any one in doubt upon the point to the advances that have been made in medicine and surgery as the direct or indirect result of experiments performed on living animals.

All the charges contained in Mr. Coleridge's paper are summed up by him in the following conclusions:—

1. That the Home Secretary allows the safeguards provided by the Act of 1876 against the torture of animals to be removed.
2. That the Home Secretary, as far as possible, throws the cloak of secrecy over his method of administration of the Act.
3. That the Home Secretary, in reply to questions in Parliament addressed to him for the purpose of procuring information that the public are entitled to receive, makes statements that contradict each other.
4. That the Parliamentary Report, purporting to give an exact account of what has taken place in laboratories, is compiled from unverified statements made by the vivisectors themselves.
5. That when breaches of the law are committed, the Home Secretary neither enforces the penalties specifically provided by the Act himself, nor enables others to enforce them.

Correspondence.

TICK OR TEXAS FEVER.

To the Editors of THE VETERINARY JOURNAL.

SIRS—The enclosed notes, embodying the results of M. Signieres' experiments with his culture of the protozoon which causes the bovine malaria known as Tick or Texas Fever, is abridged from the columns of the *Review of the River Plate.* These notes were made by Mr. Henry Coffin, a member of the Commission.—Yours very truly,

OLIVER C. JAMES.

Carcarana, Argentina,
S. America, *May* 24, 1900.

M. Signieres has just concluded a series of experiments with his recently discovered artificial culture of *Piroplasma bigeminum* as a prophylactic against the disease locally known as Tristeza (Texas Fever or Bovine Tick Fever), which decimates the herds of Northern Argentina during the summer season. The operations took place at the quarters of the Buenos Aires Rural Society, in Palermo, in the presence of a special commission, of which the Minister of Agriculture was a member.

M. Signieres premised by stating that inoculation with the blood of animals which had recovered from attacks of tick fever, as practised in Australia and the United States, was attended with too much risk, and did not confer a sufficient degree of immunity to justify its use. He had therefore directed his attention to the attenuation of *Piroplasma bigeminum*, and it was with this culture that the experiments were made.

Fifteen steers and numbered on the horns and tattoo marks on the ears.

No. 1, March 15th, was injected with 1 c.c., and Nos. 2 and 3 with 5 c.c. of virulent blood to produce the malady. These injections were made in the jugular vein.

Nos. 4 to 11 were inoculated with $\frac{1}{4}$ c.c. of the attenuated culture as a prophylactic.

Nos. 12 to 15 were not treated at all, but reserved as control animals.

On March 30th the animals were brought up for inspection.

No. 1 was found to be afflicted with tick fever in an advanced stage.

No. 2 was suffering intensely in the last stages of the disease.

No. 3 had died. Post-mortem revealed undoubted indications of tick fever.

No. 4 now received applications of young ticks propagated in the laboratory from infested mother ticks.

Nos. 5 to 11 were injected with 10 c.c. of virulent blood.

No. 13 was treated to an application of young ticks, the same as No. 4.

Nos. 14 and 15—control animals—were injected with 10 c.c. of virulent blood.

Nos. 16 and 17, two animals which had been inoculated with the culture four months before, were injected with 10 c.c. of virulent blood.

On April 11th the Commission again met to observe results.

No. 4 was found in good health.

Nos. 5 to 11, no alteration in health.

No. 12—one of the control animals—died of tick fever April 6.

No. 13—control animal—a typical case of tick fever, died subsequently.

No. 14—control animal—died on the eighth day.

No. 15—control animal—died on the eighth day.

Nos. 16 and 17—The animals inoculated four months previously, and which were injected with 10 c.c. of virulent blood, were in perfect health.

These experiments were considered sufficiently encouraging and satisfactory to induce the Commission to continue them practically in the field when M. Signieres returns from his intended trip to France. This will be done in November and December, when the greatest fatality occurs. A lot of animals will be taken from the province of Buenos Aires—where the disease never manifested itself unless brought by animals from the north—to the northern provinces and there exposed to the aggressions of ticks. One-half will be inoculated, the remainder held as control animals. They will be held under strict surveillance and results carefully noted.

FOREIGN VOTING PAPERS.

To the Editors of the VETERINARY JOURNAL.

SIRS—I have recently received a letter from a brother veterinary surgeon practising in Australia, in which he complains,—and justly, I think—of the farce that has been perpetrated by the R.C.V.S. in sending out foreign voting papers which do not contain a list of candidates. No doubt it is very kind of the Royal College to pretend that veterinary surgeons abroad have divine attributes, and can consequently vote for the right candidate whether they know his name or not; but colonial practitioners may be forgiven if they fail to see the matter in the light of a compliment, but rather as one in which they are being trifled with. This farcical performance on the part of our august corporation is not dignified, nor is it one likely to do other than produce irritation among our brethren across the seas. Either the voting papers should contain a list of candidates, or they should not be sent at all. As the matter now stands, the papers are either not used, or they are sent to some one in this country who fills in the names of the candidates he favours and forwards it to London. That the profession abroad is having its share in the election of member of Council cannot, therefore, be maintained for a moment.

I enclose the paper I received from my friend, and I think you would be doing a good thing if you published it, in order that all may see how things are managed at Red Lion Square.—I am, &c. "OCOBO."

[*COPY.*]

Foreign Voting Paper issued according to Bye-law No. 3.

ROYAL COLLEGE OF VETERINARY SURGEONS,

RED LION SQUARE, LONDON, W.C.

The Annual General Meeting of the Members will be held on Wednesday, June 6th, 1900, at twelve o'clock, to elect Eight Members of Council for the ensuing year, who retire by rotation (but are eligible for re-election), and to receive the Report of the Council, together with the Treasurer's Report.

[*Space left here for names of* 8 *Candidates.*]

Instructions for Voting.

1. The Voter must write in the above spaces the names of all gentlemen—not exceeding eight—for whom he wishes to vote.

2. The Voting Paper must be signed by the Voter with his name and address.

3. The Voting Paper must be forwarded under cover (postage prepaid) to
The SECRETARY,
Royal College of Veterinary Surgeons,
Red Lion Square, London, W.C.,
so that the same is received by him not later than May 29th.

4. Any infringement of the above Rules will render the Voting Paper of non-effect.

Signature of Voter,
Residence,
} [*This paper has been signed abroad by a Member of the College, and returned without any names of Candidates having been filled up.*]

Date February 1900.

Victoria Veterinary Benevolent Fund.

THE Second Annual General Meeting was held at 10 Red Lion Square, W.C., on the 6th June, at one P.M.

Present:—Professor Penberthy, the President, in the Chair, Professor M'Fadyean, Messrs. Bower, Villar, Fraser, Allen, Blakeway, Wragg, Simpson, Wartnaby, Samson, Bankam, and W. F. Barrett, the Secretary.

The Secretary read the notice convening the meeting.

The minutes of the previous Annual General Meeting were then read by the Secretary.

Mr. Bower proposed, and Mr. Fraser seconded, that the minutes be adopted. This was carried unanimously.

The Balance-Sheet and Report was read by the Secretary, and upon the motion of Mr. Fraser, seconded by Mr. Samson, it was unanimously adopted.

Messrs. Dewar, Wragg, J. F. Simpson, Elphick, and W. F. Barrett were elected to fill the vacancies on the Council.

Messrs. Coleman, Burrell, and Wragg were re-elected trustees, and Messrs. Woodger and Wartnaby auditors.

Mr. Blakeway asked why his name had been omitted from the list of life members who had become such prior to 31st March 1899.

The Secretary regretted the omission, and apologised for the error, but said this in no way affected the accounts, as the sum paid by Mr. Blakeway was duly audited in the preceding financial year.

The President then addressed the meeting and congratulated the members on the continued progress of the Society. He announced the purchase of £800 worth of consols, and remarked that although during the past year £62 had been given in relief, there was a balance in hand of about £130.

Some of the cases were of a most distressing character, and he was sure if the members of the profession knew what extreme poverty existed they would much more readily respond.

Other members commented upon the satisfactory position of the Society, and hoped the good work would be continued with increased energy.

Votes of thanks to the President and Secretary terminated the meeting.

CONTAGIOUS DISEASES ANIMALS ACTS, 1864 AND 1899.

SUMMARY OF RETURNS OF OUTBREAKS for the Nine Weeks ending 16th June 1900.

ENGLAND AND WALES.

Foot and Mouth Disease.	Swine Fever.	Glanders (including Farcy).	Rabies.	Anthrax.	Sheep-Scab (for months of April and May).	Parasitic Mange (for month of April).
Outbreaks 2 Attacked 24	Outbreaks 510 Slaughtered 5028	Outbreaks 206 Attacked 335	None.	Outbreaks 76 Attacked 121	Outbreaks 118	None.

SCOTLAND.

None.	Outbreaks 6 Slaughtered 180	Outbreaks 2 Attacked 3	None.	Outbreaks 45 Attacked 70	Outbreaks 6	None.

IRELAND.

None.	Outbreaks 60 Slaughtered 948	Outbreaks 2 Attacked 6	Dogs Attacked 4 Other Animals 0 Destroyed 6	None.	Outbreaks 64	Outbreaks 8

Communications, Books, Journals, &c., Received.

Agricultural Journal (Cape of Good Hope); Berliner Thierärztliche Wochenschrift; La Clinica Veterinaria (Milan); Deutsche Thierärztliche Wochenschrift; Tannoform in Veterinary Medicine (March); The Sanitary Journal; Scottish Medical and Surgical Journal; Veterinary Record; La Riforma Veterinaria; Le Mois Scientifique (Paris); L'Echo Vétérinaire (Liège); Annales de Médecine Vétérinaire (Brussels); Johns Hopkins Hospital Reports; Journal of Comparative Medicine and Veterinary Archives; Recueil de Médecine Vétérinaire; Gazette Médicale de Paris; Modern Medicine; Johns Hopkins Hospital Bulletin; Rev. F. Lawrence; Lancet; J. Dunstan; Harold Leeney; W. F. Barrett; J. M'Phail; Oliver C. James; Jas. J. Lodwick; Interim Report by Professor M'Call; Report by General Manager of the Glasgow Corporation Tramways.

We regret that, owing to great pressure, we are unable to publish this month several important communications, &c. received from contributors.